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ABSTRACT

This paper elaborates on the concept of "linkage"--the utilization of educational research information--as implemented by the Documentation and Technical Assistance (DTA) Project, a program designed to enhance the problem solving capacity of urban schools. The paper begins with an overview of the DTA project and discusses the educational knowledge base being used for the linkkage between research and practice. A brief chronology of DTA's linkage work and a discussion of the barriers and aids encountered in attempts to apply existing knowledge to problem solving are then provided. This is followed by a detailed exploration of 14 specific linkage experiments. Activities described fall into three areas: knowledge transformation; media supported, direct knowledge transfer; and interpersonal linkage relationships. The paper concludes with several questions meant to stimulate further experiments in linking research to educational practice. (Author/GC)

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June, 1980

LINKAGE IN A NEW KEY: THE DTA EXPERIENCE

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TABLE OF CONTENTS

I. Introduction 1

Linkage as a strategy for educational improvement 1
Overview of paper 3

II. DTA: the Setting 5

History 5
DTA's linkage mission 7

Emerging concepts of linkage 10
Underlying assumptions 12

III. The DTA Approach to Linkage 14

Nature of knowledge base 15
Nature of the user system 21
Nature of linkers 24
Nature of linker-user transactions 29

IV. DTA: The Immediate Context for Linkage 36

Brief chronology 36
Phase I 36
Project organization 36
Coordination problems 36
Substantive and structural focusing 39
External review 40

Phase II 44
Conceptual diffuseness 45
The Synthesis Conference 46
Technical assistance and linkage 48
Case study production 50
External review 50
The plan for Phase III 50
DTA is terminated 51

Barriers and aids to linkage in the DTA context 52
Barriers 52
Aids 55

V. Selected DTA Linkage Experiments 57

Type 1 Linkage: Knowledge Transformation Experiments 58
1. Study of user criteria for case study "usefulness" 58
2. Critical activity listing 60
3. Development of cross-site foci 61
4. Building commonality between researchers & technical assisters 64
5. Computer-aided retrieval of TA-relevant research information 66
6. Handbook on knowledge utilization for technical assisters 70
7. The TA-DOC linker role 71
8. The Synthesis Conference 73
9. Linkage seminars 76

(TABLE OF CONTENTS, cont'd)

V. Selected DTA Linkage Experiments (cont'd)

10. Problem-solving repertoire 78

Type 2 Linkage: Direct Knowledge Transfer (Media-supported) 79

11. Photographic displays 79
12. Slide-tape show 81

Type 2 Linkage: Direct Knowledge Transfer (Interpersonal) 82

13. Site researcher aid to user systems 82
14. Site practitioner aid to user systems 84

VI. Conclusions and Puzzles 88

The linkage activities 88
The DTA experience and linkage 91

References 95

LIST OF FIGURES

1. Timetable for DTA Project 7
2. Linkage in the DTA structure 11
3. DTA Project logo and explanatory diagram 56
4. Examples of computer-retrieved data bits on school-community governance 69

June, 1980

LINKAGE IN A NEW KEY: THE DTA EXPERIENCE

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I. Introduction

Linkage as a Strategy for Educational Improvement

The idea that practice in a field can (and should) be improved by regularized use of expert knowledge is an old one. Indeed, some would say it is the defining idea of any craft, guild or profession: such groups cumulate a working body of knowledge, and transmit it to new practitioners through formal education, apprenticeship, and colleague interaction. But the idea that knowledge derived from research ought to (and can) be used systematically to inform practice is much more recent; it probably does not antedate the creation of the agricultural extension system in 1914. Indeed, less than a decade ago, Havelock (1971), after a review and synthesis of well over 4,000 studies of knowledge-based change, said that

> knowledge utilization is at best a crude art occupying the undivided attention of only a small scattering of scholars in three or four centers of learning. There are no schools, no curricula, and few courses for training researchers and practitioners in this area, and there is as yet only a dim awareness on the part of the nation as a whole that this field deserves extensive public support.

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A number of people closely familiar with the DTA Project read an earlier draft of this study, and made comments and suggestions. I am grateful to Stephen T. Andrews, Jane H. Arends, David K. Cohen, Richard P. Francisco, Frances B. Holliday, Manford Holmes, Terry Lenoir, Frederick Mulhauser, Ralph Parish, Philip J. Runkel, and Thomas A. Wilson for their critical advice.

Havelock defined "linkage" as a state in which two systems (in effect, a knowledge-producing and a knowledge-using one) "are connected by messages so as to form a greater system." He went on to suggest that durability of connections was important:

> ...a single exchange of messages will not suffice as an adequate definition of linkage. Rather /it is/ a regularized pattern of interaction between two systems which in a real sense forms a bond between them.

The linkage concept, elaborated by Havelock to subsume other orientations to planned change including the research, development and diffusion (RD&D) perspective, the "social interaction" view of diffusion among an adapting population, and the "problem-solving" approach, emphasizing user-driven change, has become increasingly central in the last decade's efforts to understand and manage knowledge utilization efforts, in education particularly. Beginning with Sieber et al.'s (1972) study of linkage agents helping school people to select and utilize educational R&D information, there has been more and more commitment to the idea that data bases, no matter how sophisticated and even where they include well-validated professional practices as well as research reports, are not at all self-implementing.[1] Rather, "knowledge" needs linkage-supportive structures and the attention of linkage agents if it is to make a school-improvement difference. The last few years have seen the development of well-worked out linkage systems such as the National Diffusion Network (Emrick et al., 1977) and systematically-designed linkage experiments such as the R&D Utilization Program (Israel,);
both are dedicated to the idea that linkage agents are needed to work with schools to broker new practices from the existing data base, aid with adoption

---

[1] Even the "Product Information Packages" of information on new instructional practices developed for use on a "stand-alone" basis turned out to need the mediation of linking agents (Stearns & Norwood, 1977).

decisions, and support the vicissitudes of implementation.

In 1977 and 1978, "Dissemination Forums" brought together several hundred researchers, linkers, and "users" of educational knowledge to reflect on the state of the knowledge utilization art in education. Efforts to synthesize available studies and conceptualize knowledge-practice linkage have multiplied (Human Interaction Research Institute, 1976; Hood & Cates, 1978; Butler & Paisley, 1977; Emrick & Peterson, 1978), as have practice-based discussions of linkage and linkage agents (Nash & Culbertson, 1977). "State of the art" papers have been produced (Berman, 1980; Fullan, 1980; House, 1980; Louis, 1980; Miles, 1980; Sieber, 1980).

But our information on just how it is that knowledge utilization works in educational improvement is not extensive. Most of what is known concerns the adoption of specific educational innovations, largely in "advantaged" school districts. Less is known about the process of implementation (Berman, 1980), and still less about what it takes to utilize complex knowledge that might aid in "capacity-building" of a school or district. And few studies of linkage have been done in the complexities of urban settings, though these are clearly most in need of competent assistance.

Overview of Paper

We need to understand what "linkage in a new key" might look like: linkage that goes beyond the marketing and installation of specific programs and emphasizes renewal in school organizations. This paper describes a linkage effort carried out by the Documentation and Technical Assistance (DTA) project, an NIE-funded effort to utilize knowledge gained about organizational change strategies in nine urban school districts for school improvement programs in other districts. The aim is to make the difficulties and successes of the effort explicit, both as an aid to future similar efforts, and as a contribution to our understanding of knowledge-practice linkage as a school improvement strategy. The DTA experience was almost unique among current efforts to understand and practice linkage, and this paper describes and analyzes the DTA experience, to make its lessons--both positive and negative--more widely available to those interested in linkage theory and practice.

The paper begins with an overview of the DTA project--the setting in which the experiments took place--and its linkage mission. Then it turns to the DTA linkage approach, discussing in turn the knowledge base being used, the nature of "users" and linkers, and the types of transactions they typically carried out. A brief chronology of DTA's linkage work, and a discussion of the barriers and aids to linkage DTA encountered, precedes a detailed discussion of 14 specific linkage "experiments."[2] Generalizations and puzzles, with suggestions for further inquiry, form the concluding section.

The author's role. The paper is written from my perspective as an external consultant to DTA. I was engaged in February of 1975, shortly after contract award, and continued active work through January of 1978. As one of four external advisors, I did wide-ranging work: it included design and facilitation of project-wide meetings, continuing advice to project managers, critique of project products, aid with project planning and redesign, and occasional substantive input. I averaged 20 days a year on project work. My perspective is thus one of an involved advisor, largely sympathetic to and supportive of the project management's efforts to achieve project goals. However, I had no line responsibility, and feel little need to justify or defend project activities.

To the best of my knowledge, I had full and thorough access to project personnel, and to project events and products. This paper is based on a wide range of project documents, on memoranda I wrote, and on a series of retrospective interviews with project personnel held during January and February of 1979. It has been reviewed for factual correctness with project personnel; where my interpretation of events differs from theirs, that is noted.

8

[2] The quotes are meant to indicate that the approaches described are less systematic than those described (for example) by Olson (1979). They lack control groups and precise measurement. But they do represent inquiries into how an ambitious and complex linkage task could be carried out in alternative ways.

II. DTA: The Setting

History

In December of 1973, a National Institute of Education task force report called "Building Capacity for Renewal and Reform" was issued. We quote from a DTA "project overview" brochure: (1977

> The authors of the report argued that the strategies of providing massive aid directly to schools, and of developing products to be delivered to or imposed on the schools were not effective by themselves. The report stressed that schools are complex social organizations and that a school's capacity as an organization to productively incorporate new ideas and programs within its structures is a key to effective change. The report urged NIE to investigate the conditions under which schools reached out for new ideas and implemented them successfully, and to study and support internal processes of growth and renewal through which local school practitioners identified their problems and found resources and ideas to meet their needs. This process was called "problem solving," and a school's ability to solve its problems was called "capacity for problem solving."

NIE's subsequently-formed group on School Capacity for Problem Solving awarded grants in June 1974 to nine change efforts already under way in urban schools located in New York City (4 sites), Washington, D.C., Kentucky, Minnesota and California. The approaches being used to improve problem-solving capacity* varied widely, and included collaborative structures involving parents, staff and students; development of mini-schools, alternative schools and "open corridor" methods; teacher centers; organization development; faculty involvement in governance and peer support; management by objectives; and training for staff and parents to reduce school-community "discontinuity." All thus represented fairly comprehensive change efforts, going far beyond the adoption of specific instructional innovations.

NIE also wrote a Request for Proposals (RFP) to fund a contractor who would document the strategies being used at the nine sites, and develop ways of utilizing mation to aid other schools in improving their problem-solving capacity. The aim, in effect, was to carry out a complete chain of processes: knowledge production (research), linkage to potential users of the knowledge, and aid to the users in applying the knowledge to the improvement of their own "problem-solving capacity."

---

* As the NIE project officer noted after reading this, it was not likely that "capacity building" was the original aim; rather, the NIE staff had simply looked for sustained, internally-generated change efforts focusing on units larger than "one teacher and one classroom."

Two semi-finalists in the competition, the Center for New Schools (CNS) in Chicago, and the Center for Educational Policy and Management (CEPM) at the University of Oregon, decided to collaborate and were awarded the contract in December of 1974. CNS had a strong background in urban education experiments, and work with qualitative research methods; CEPM had had extensive experience with researching and carrying out organization development in schools. The two organizations had clearly complementary skills, and were confident of their ability to sustain a collaboration.

Figure 1, from the DTA 1977 Project Overview, shows the timetables. Three project phases were envisioned, with funding and scope of work to be renegotiated after review of Phases I and II. Phase I was to include documentation, along with some analysis, and the beginnings of technical assistance to "user" schools (ones other than the 9 sites). That technical assistance, and the entire DTA enterprise, was also to be documented. Both later phases would extend analysis and especially technical assistance considerably.

As executed, the enterprise was not small; it employed 33 full-time staff during Phase I in many different locations around the country (Chicago, Bay City,* and Eugene, Oregon, in addition to the nine research sites), and expanded to over 40 staff during Phase II. We will review the linkage-relevant aspects of DTA's history in Section IV of this paper;[3] here we should only say that the implementation of DTA encountered many substantial problems, some of them largely unforeseen. As a result of intensive review at the close of Phase II, NIE decided not to fund a full-scale Phase III,

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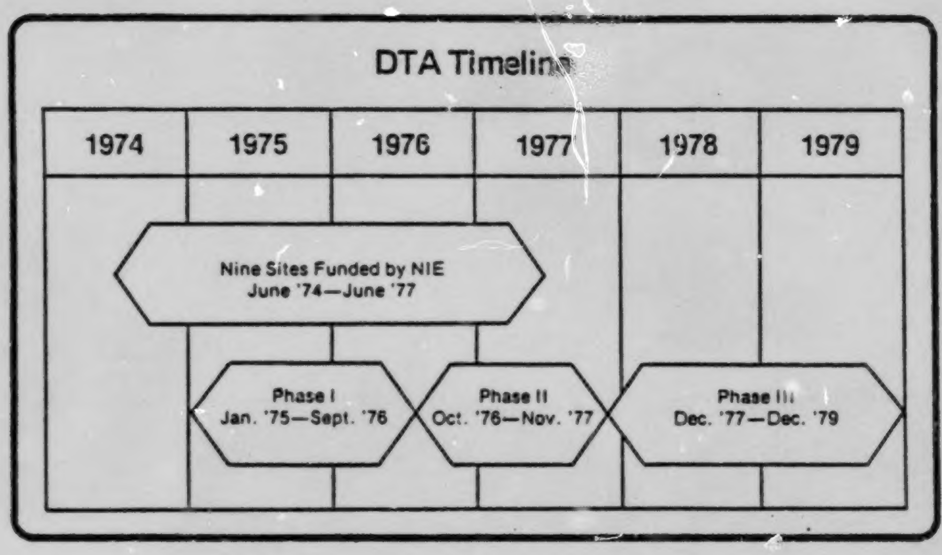
* Pseudonym.

[3] The reader with interest in a fuller account of the DTA experience should consult Smith & Gregory (1978), and Smith & Dwyer (1979).

Figure 1

TIMETABLE FOR DTA PROJECT



which would have involved extensive technical assistance work; instead, only small-scale support was provided for final analysis and write-up of work carried out up through Phase II, which had included analysis of the 9-site data, a good deal of knowledge transformation and linkage activity, and technical assistance in two sites (Bay City and Chicago). Depending on one's position and stakes, the termination of the DTA contract could variously be seen as a premature end to an enterprise with great promise, a natural result of excessively ambitious hopes, or a disappointing failure. For our purposes, the question of DTA's over-all success or failure is not central: our focus is on the linkage aspects of the DTA enterprise, how (and how well) they worked, and their heuristic value for others interested in studying and practicing linkage.

DTA's Linkage Mission

The RFP. The scope of work outlined reads in part:

> The purpose...is to study the effects of particular organizational strategies on the capacities of schools to solve their problems, and to develop means of helping others to learn from and modify those organizational strategies to meet their own needs.

> ...
>
> The study is to describe the various strategies in detail, and to gauge their impact on the target schools. The initial questions are: what happened in the course of attempting these strategies, and were the schools better as a result of the strategy or parts of it? The Contractor must also take the information gathered from each site, and any multi-site comparisons or contrasts that seem useful, and use that body of experience to help other schools who are, or could be, interested in improving their own problem solving...
>
> It should be stressed that the principal audience for the study is the practitioner rather than the researcher. Data analyses and forms of communication or help will be chosen for their practical utility in schools... *
>
> The principal, but not exclusive, set of strategies to be studied are those being employed by nine organizations awarded three-year grants in June of 1974...

The intent was thus clear, and ambitious: the contractor was to develop knowledge about strategies for improving problem-solving capacity, to assure itself that the strategies were productive (though "evaluation" was not required), and to utilize the knowledge in providing assistance to other schools.

The RFP left open just how "linkage" would be carried out. After specifying Task 1 (documentation of problem-solving strategies at the 9 sites) and Task 2 (cross-site analysis), it went on to Task 3, alluding to linkage activities generally:

> Selection of user sites and/or ongoing technical assistance programs and within these, experimenting with ways of using research information and technical assistance to help schools.

The RFP also emphasized the importance of interaction and feedback among the three tasks, suggesting that Task 3 people should assess user needs early as a way of influencing Tasks 1 and 2 plans.**

The proposal. DTA's proposal to NIE was somewhat more specific. It said that the documentation work at the 9 sites would emphasize three conceptual frameworks, as follows:

---

* A DTA staffer who read this said the supposed practitioner orientation was news to him; another said that NIE was "hypocritical" in the definition. Both comments suggest the retrospective view that DTA was judged on its output for researchers or policy-makers, rather than for practitioners.

**The NIE program officer noted:

> We had in mind a kind of thesis-antithesis-synthesis notion, in which the TA people and the site research people, equally well-informed about their respective worlds, could agree on what would be of most value to study in the 9 sites.

Framework 1: First-level concepts, such as patterns of interpersonal interaction between role groups, organizational control and decision-making, norms, problem solving, and techniques of assistance used by the helping agency involved with the site.

Framework 2: Alternative schemata, ways of relating the concepts to each other. One such schema outlined focused on skills as primary causal factors in organizational problem-solving; they might be interpersonal (ex.: receptiveness, responsiveness); subsystem-level (ex: agreeing on goals); or school-level (ex: maintaining access to fresh ideas).

Framework 3: Critical activities, such as orienting new students clarifying change goals, or improving staff collaboration. These were seen as "concrete, bounded activities" that were essential or crucial for "realizing a successful operation". The activities would be arranged in PERT-like flow charts, using the ideas from Frameworks 1 and 2, and "mapping" the activities using a sequence of technical assistance phases including entry, contract-building, diagnosis, transition, formative evaluation, and maintenance.

The knowledge to be used from the 9 sites in aiding new "user" schools was summarized as follows (p. 104 of proposal):

> ..knowledge of the structures of urban schools in terms of their system and subsystem qualities as well as their typical norms and regularities..derived from analyses within our Frameworks 1 and 2.
>
> ..knowledge of the critical activities needed to facilitate particular organizational changes and of the interrelationships among them.
>
> ..diagnostic procedures for assessing the state of a school organization in terms of our refined Frameworks 1, 2, and 3.
>
> ..relevant materials and techniques to supplement face-to-face assistance.

The proposal explains that once the "critical activities" flow charts were developed by the research and development staff, materials based on them would be produced; they might include procedural descriptions and explanations initially, then move to (pp. 109-110):

> (1) Plans, designs, handouts and exercises for a series of workshops concerned with key skills and norms present in the activity structures;

> (2) Handbooks concerned with the skills needed to implement the critical activities that must be carried out to implement diverse kinds of organizational change...for example..building citizen-educator planning teams..
>
> (3) A resource box with file folders with information about each of the important critical activities.

The proposal also said that materials would include audiotape, videotape and photographic material as well as print.

Finally, the proposal emphasized:

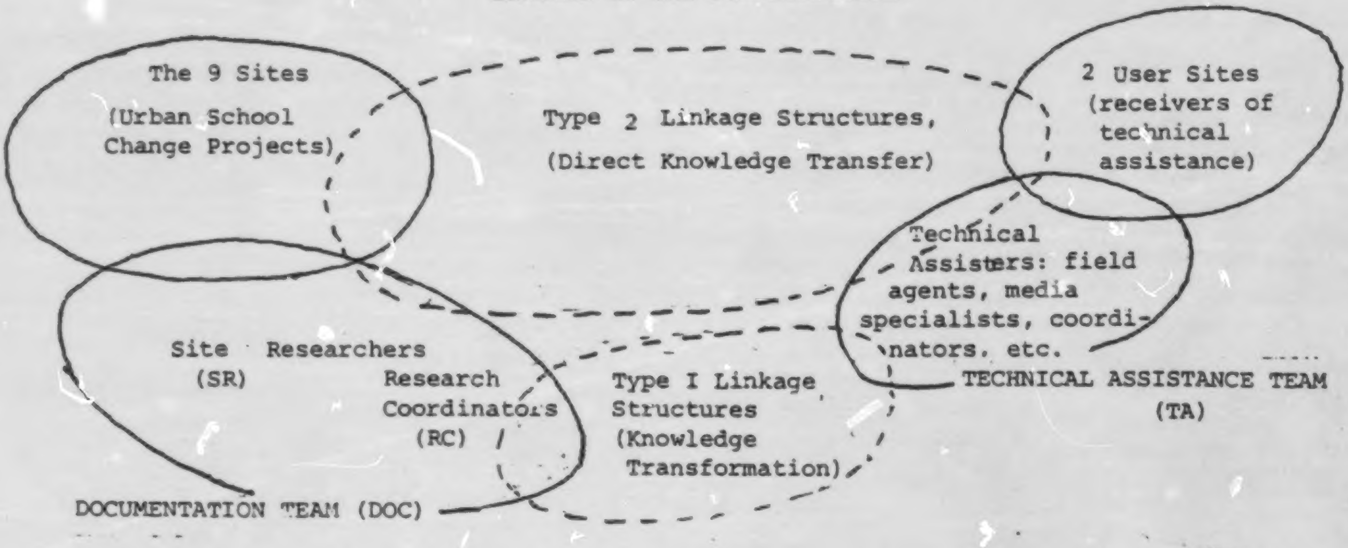
> We view direct face-to-face consultation as central to the technical assistance that will facilitate the types of organizational changes in problem-solving that are the focus of this project. Manuals, films, audio-tapes and videotapes, in themselves, cannot bring about changes in skills, norms and group structures that are necessary for long-lasting changes in organizational problem solving. (p. 22)

A six-phase model of consultative assistance (see above under Framework 3) was outlined; it would be carried out by technical assisters, external to the local school districts involved. They would make initial entry to four school sites by the summer of 1975, both to begin work and to obtain feedback on the effectiveness of preliminary materials and technical assistance approaches. The proposal also contemplated the development of user "networks" by 1976, in which dispersed internal change agents, principals, or alternative schools might join to provide each other information and support.

Emerging concepts of linkage. As DTA carried out its first 18 months of work, the idea of linkage gradually became operationalized in particular ways. Fig. 2 summarizes these graphically, showing the roles and groups involved. Detailed documentation of the change strategies and ongoing processes in the "9 sites" was carried out by nine site researchers, who were in turn accountable to 3-4 research coordinators, charged with supervision and the management of the documentation enterprise. Together they formed the Documentation Team. At the elbow of the user sites (schools in, as it turned out, two districts which were

Figure 2

LINKAGE IN THE DTA STRUCTURE


The 9 Sites
(Urban School Change Projects)
Type 2 Linkage Structures, (Direct Knowledge Transfer)
2 User Sites (receivers of technical assistance)
Technical Assisters: field agents, media specialists, coordinators, etc.
TECHNICAL ASSISTANCE TEAM (TA)
Site Researchers (SR)
Research Coordinators (RC)
Type I Linkage Structures (Knowledge Transformation)
DOCUMENTATION TEAM (DOC)

to benefit from the insights gained from the 9 sites) was a Technical Assistance Team, including a coordinator, media specialist, and technical assistance field agents.[4]

How would linkage take place? There seemed to be at least two modes. Type 1 linkage, which might be termed knowledge-transformation, involved interaction between members of the DOC and TA teams, in which TA members' needs and DOC members' information about the 9 sites came together with the objective of enabling better TA assistance to the user sites. The linkage mechanisms experimented with were essentially internal to the DTA staff, who were engaged in an effort to understand the meaning of 9-site events and processes, and to transform/convert this knowledge into workable means of assistance to user sites. Type 1 linkage, then, is mediated knowledge transfer.

---

[4] Not shown in the diagram is the Study Team, a group charged with documenting the entire knowledge-to-practice process and assessing its effects.

Type 2 linkage might be labelled direct knowledge transfer. Here representatives from the 9 sites interacted directly with user sites, with the aid of DOC and TA-team members, who, rather than transforming or converting knowledge, sought to facilitate or catalyze the knowledge transfer process between the original 9 sites and user sites.[5]

Both linkage types, as the dotted lines suggest, tended to occur in temporary-system settings: seminars, visits, workshops, analysis sessions. Type 1 and 2 linkage efforts also involved the production of materials supportive of further technical assistance.

Underlying assumptions. Based on the RFP, the proposal, the concept of linkage as it emerged, and the views of DTA staff in retrospective interviews, some important assumptions were being made. Since the elucidation of assumptions is usually an infinite-regress task, it seems wise to limit our list to those which seemed at the core of the enterprise.

1. Cognitive clarity. It was assumed that the knowledge to be transferred could be fairly cleanly conceptualized. DTA would be able to formulate (a) the nature of problem-solving, and problem-solving capacity; (b) the characteristics and consequences of interventions aimed at enhancing it; (c) the characteristics of better educational practice; (d) the connections among (a), (b), and (c). In short, these matters were assumed to be knowable in general, to be specifically identifiable in the 9 sites, and to be documentable.*

---

[5] We should note that Type 2 linkage was an emergent strategy; by and large it had not been anticipated in the proposal or early planning. A DTA staffer who read this suggested that Type 2 strategies emerged because of Type 1 failures (caused by site impatience with delay, reluctance of researchers to collaborate with technical assisters and vice versa). See below for more detail.

*The NIE project officer said after reading this:

> No one at NIE, certainly, ever held the views about what DTA could/should find out that you set out in #1; perhaps some phrases in the RFP, as well as some chunks of the proposal represented face-work on both sides...the few words [of this sort] we left in that leave this ultra-positivistic impression do not accurately reflect our underlying frame of mind, or how we worked with the project over the years.

The author's view is that while this disclaimer is reasonable, the basic structure of the proposal (and the tacit commitments of DTA people to it) was indeed congruent with the assumption as laid out. "Face-work", if it was that, did indeed come to be taken seriously, at least by project personnel.

2. Transferrability. The DTA effort also seemed to be based on the assumption that knowledge like that described above could be extracted from its original context; could be explained, described, displayed or taught to people in other contexts; and that these others could meaningfully comprehend/learn it.[6]

3. Productive impact. In addition, it was assumed that the understood information would turn out to be usable in its new context; would result in an improvement (better practice, improved problem-solving capacity, etc.); and would become, as one staff member put it, "part of the repertoire" in the new context, reasonably institutionalized.

4. Chaining. It also seemed likely that assumptions 1, 2, and 3 were formulated in a "chained" fashion: the knowledge had to be clear, and it had to be transferrable, and it had to be useful (have an impact). And there were subchains within each assumption (ex: the knowledge would have to be extractable, and explainable, and learnable.) Since chain strength is a function of link strength, we might predict that failures at any point in the string of assumptions might make general failure more likely.

---

[6] The DTA staff was not, like most "product"-oriented innovators, committed to the idea that the knowledge would be necessarily universally applicable, a "technological fix" for the problems of all schools (cf. House, 1975). Demonstrating single-case transfer would be enough.

5. Success orientation. Yet, as a DTA advisor pointed out, the intent of the DTA project sseemed to be

> ..to find out how to solve problems (moving from DOC to TA) rather than finding out if this worked. This placed a low emphasis on learning about problems and a high emphasis on learning about success--this in a project and an area of practice where failures and problems were bound to vastly outnumber successes.

Although the DTA manager said retrospectively that the issue was "getting lessons in one change effort in a form so they could be dealt with (accepted or rejected) in another change effort," several staff interviewed said they felt the issue was "making research findings practical, useful," "helping users do something better." And the language of the RFP ("help other schools who are, or could be, interested in improving their own problem-solving"..."forms of communication or help will be chosen for their practical utility in schools..") strengthened not only the assumption of meliorism, but the deeper assumption that DTA's linkage efforts should succeed. That assumption was probably not universal throughout DTA---few things were---but it was present in enough minds to be troublesome.*

---

* The NIE project officer noted here:

> You stress mightily an assumption..that the TA "should succeed". I think that's true in the trivial, if natural sense that one hopes always that affairs will turn out beautifully. But as I recall the operational flavor of things, we put more stress on [the idea that]..DTA was expected to be trying out some "experiments" with hooking up complex study methods to TA...We kept remonstrating that it wasn't DTA's job to fix up schools; it was DTA's job to try out intentions and goals at the farther edge of practice.

6. Rapid achievability. The DTA study design, perhaps encouraged by the RFP, also made the assumption that the chain of processes (practice to knowledge to practice) reviewed in assumptions 1-3 could be carried out relatively quickly; it was believed that documentation team researchers could quickly extract meaningful information from the 9 sites, and that this knowledge could be transformed/packaged and started into new sites as soon as six months after researchers had begun work.

7. Interpersonal brokering. As we have already noted, the primary assumption was that knowledge about effective practice and school change strategies could not travel unaided to new sites, but would require face-to-face contact between technical assisters and users, so that, as one staff member put it:

> The site could shape what they were grappling with, and the /TA person/ could tailor the information to their needs. There had to be direct, real human contact, not over the phone or in documents.

All these assumptions (with the possible exception of #6) are reasonable ones to make in any knowledge transfer process. The general points to be made here are that (a) the assumptions limit the enterprise to certain linkage strategies and styles of work, and require certain abilities and actions; and (b) if held unquestioned, they subject the enterprise to considerable stress when reality does not match them. We shall return to these points as we review the immediate context of DTA's linkage efforts later on.

III. The DTA Approach to Linkage

There are many dimensions of any effort to link knowledge-producing and knowledge-using systems. In order to characterize the unique aspects of the DTA linkage experiments, we will utilize descriptors drawn from Hood & Cates (1978) and Butler & Paisley (1978), both of which represent state-of-the-art reviews, supplementing them with others that seem essential for a clear account.

The descriptors fall in four broad domains: the nature of the knowledge base from which particular items are drawn; the nature of the user system; the nature of the linking agent; and the nature of the transactions between the linking agent and the user. We carry out this extensive description so the DTA linkage efforts can be situated in the broader universe of approaches to linkage.[7] As the reader will see, DTA was attempting an unusual and difficult ---perhaps even impossible--linkage task.

Nature of Knowledge Base

Type of knowledge included. As we have seen, DTA's intent was to develop a base of information that would include knowledge of organizational structures and processes, critical activities supporting change, and particular diagnostic tools, along with other materials and techniques. Interviews with DTA staff suggested a more differentiated view. First, it seemed clear that the preponderant emphasis lay on "process" knowledge ("how to get a principal working with a group of parents"); information bearing on educational content ("a good reading program..) was less frequently mentioned, and sometimes downgraded ("not a package necessarily,..we didn't want to be seen as having the answer.")[8]

Second, DTA staff mentioned knowledge of three general types: descriptions, generalizations, and prescriptions.[9]

Descriptions were capsuled by one interviewee:

> ...How somebody else does it (here's how we did it, and here's how to get around the problems if we were to try it again).

---

[7] Much of this "situating" is occurring after the fact: as the reader will note, a good deal of the literature cited appeared after the DTA events we are describing. However, it is also fair to say that DTA under-utilized the then-available literature on knowledge transfer and utilization. NIE staff members were sometimes seen as downplaying the importance or significance of prior work on knowledge transfer, and one DTA staff member said on reading this study that an eighth DTA underlying assumption might well have been that of "bootstrapping", based on the belief that "we can do better if we scrap all of the previous approaches and start from scratch."

[8] One respondent also mentioned that "knowledge of resources" (where to go for further information) might be important.

[9] A couple of respondents mentioned that "knowledge" might include motivational items which would enhance the user's readiness, propensity for action, or "sense of excitement." But it was not wholly clear just what such knowledge would look like (testimonials, evidence of efficacy, claims of ease of use, etc?) since the emphasis was not on knowledge type as such, but on its impact.

Descriptions were to be minimally-interpreted data, "sifted" if possible, showing as clearly as possible how educational practices or change strategies had been carried out. (They might include photos and videotapes as well as print, or direct oral accounts.). Possibilities included "whole strategies, parts of strategies, sequences of action....or contextual information."

Generalizations were variously characterized as "lessons"..."macro hunches" ...instances of success and "negative learning", "Why things didn't work" as well. Generalizations are, in effect, descriptions of repeatedly-occurring facts, or facts illuminated in some way by intelligent judgment.

Prescriptions were to involve advice, preferred techniques, "how it works," "...the classroom nitty-gritty." Such knowledge is not grossly prescriptive in the sense of urging particular educational goals or techniques, but takes the implicit form: "If you want to do X (X = involve parents, or use open corridor methods, or build a sense of identity in minority children), then here's what you have to do." "Actions not to take" were also relevant, as were "unimplemented good ideas."

In general, we might note that (1) the knowledge to be moved along DTA linkage channels tended to be thought of as processual; (2) pre-packaged or systematically-developed "programs," innovations or practices were unlikely to be present; (3) as one respondent noted, the main emphasis was on "lore" and "facts"--"there were a lot of stories, description of changes, and how to's."[10] There was relatively little attention to theory in the sense of explanations or undergirding principles. One advisor said, "The project seems to have no fundamental poles around which to organize information...not many decision rules to use in thinking about what to codify for the potential use of other schools." The DTA staff developed a number of conceptual frameworks to guide their documentation and technical assistance work, but it is not wholly clear that they considered these frameworks themselves to be primary and important knowledge for transfer to clients.

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[10] The fact-theory-lore distinction was originally made by Holmes (1977); in a DTA working paper, he defined "lore" as "traditional knowledge and experience-based wisdom ...the oral tradition which accompanies practice." He suggested it typically included both theoretical and factual elements, and aimed at integrating these meaningfully, "connecting the concrete with the abstract, the specific with the general." Seen at this level, "lore" is rather like the "craft"-relevant knowledge outlined by Cohen & Phillips (1978) who define it as "intuition, accumulated experience, and what is called 'skill'."

Late in the project, Wilson (1977) developed a thoughtful analysis of the cognitive frameworks shared by technical assistance groups and their clients in the original 9 sites, and how such frameworks aided in "problematizing the world," in information search, in systematic planning, in solution invention, and in the development of morale and solidarity. But this analysis post-dated most of DTA's linkage efforts, which were, as we have suggested, more descriptive and prescriptive than theoretical. Descriptions and prescriptions may well turn out empirically to be the basic fodder of technical assistance; here we only note the lack of more general ideas in what would be passed on to clients.

Form of information. Following Hood (1979), one can view knowledge as appearing, typically, in several forms: oral, documentary (written/printed), audio-visual, and references or citations. The DTA knowledge base, in its original concept, was seen as existing in documentary and audio-visual form (though it was seen as needing mediation through face-to-face technical assistance). The possibility of direct oral transmission of knowledge from the research sites to new client systems was less central (though, as we shall see, it assumed more value as linkage experiments developed). Generally speaking, there was little room for the idea that citations, reading lists, and the like would be part of the knowledge base.

Validity. Was the knowledge to be transmitted by DTA "trustable"? How would confidence in it become established? As we have seen, DTA was charged by the RFP with some verification of the degree to which the information to be used in new sites had indeed been associated (positively or negatively) with "school improvement" in the 9 sites. There would be no point in simply passing on unvalidated information with unknown relevance to the enhancement of problem-solving capacity. The notion of "critical activities" presupposed some analytic/empirical judgment as to whether the activity had really made a difference (and could therefore be expected to do so in another site). But the operations for assessing validity remained largely unspecified: interviewees spoke of "success" and "failure," "lessons learned," "practice-oriented pieces of wisdom," and "research information," but tended not to specify how success was to be defined, or what would qualify as a "lesson" or "wisdom."* The DTA director spoke of the desirability of "balancing the nitty-gritty with some level of generalization" drawn from cross-site analysis. The validation process seemed to rest primarily on judgments made by site researchers, local practitioners, and technical assistants that a particular piece of information was trustable. In this respect, the validation process was considerably less systematic than that followed in the procedures developed since 1972 by the Joint Dissemination Review Panel (JDRP) or the "identification, validation and dissemination" (IVD) process (U.S. Office of Education, 1979). In the absence of such "objective" means of validation--a sort of "Good Housekeeping seal of approval"--we might expect that those doing "linkage" might (a) encounter more skepticism from potential users of the information they were brokering, and (b) feel somewhat less confident themselves.[11]

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[11] Note the following assertions drawn from the Introduction to *Educational programs that work*, the assemblage of JDRP-approved programs (U.S.O.E., 1978):

> The exemplary programs...were developed in a wide variety of educational settings. Nearly all are now ready to be considered for possible adoption or adaptation at school sites anywhere in the nation. Each has demonstrated convincing evidence of its effectiveness with specific groups of learners..

Such claims could not be made by the DTA staff pursuing linkage efforts. They would have to rest their case on the results of their qualitative research effort, on inherent plausibility, and perhaps on testimonials by the original users. It is also possible that the process-oriented, "non-program" character of the DTA knowledge might promote skepticism and reduce confidence.

*A DTA staffer, after reading this, said he believed validation difficulties were "key", since they required TA staff to "put their credibility on the line" and encouraged them to rely on ther own past experience rather than uncertainly-validated research information. And, he noted, research staff, worried about validation, often put TA staff in a "holding pattern" with comments like, "I'll have to check further...[the site researchers] might be imposing their own feelings on the data."

Science-based vs. practice-based derivation. The question of validity is associated closely with the question of the source of the knowledge to be transmitted. As Hood (1979) points out, it is probably correct to say that

> ..the vast mass of educational products, practices, and less tangible forms of knowledge tends to have only remote association with any form of disciplined inquiry, despite in many cases having survived the test of time.

So, in spite of the supposed dominance of the "RD&D paradigm," we should be cautious in claiming that the knowledge usually travelling in educational linkage channels is science-based--or even systematically tied to current practice. And we should not stipulate, either, that "science knows best" when it comes to practice-improving information: as Cohen & Phillips (1978) suggest, the scientific process of analyzing problems into "analytic categorizations of discrete elements in teaching and learning" may be less helpful than the "holistic, judgmental and experiential" knowledge needed for the exercise of craft. (See Holliday & Salley (1979) for further discussion on the issue of user-relevant knowledge.)

If DTA had a bias, it was away from traditional hypothetico-deductive scientific methods, toward "grounded theory" (Glaser & Strauss, 1967), and toward user-relevant knowledge. The aim, in effect, was to recast "science" in practice-based terms: to carry out inquiry that would be closely influenced by the realities of practice, but would by its care and thoroughness transcend "lore" and story-telling. The hope was to have the best of both worlds.* But there are few exemplars of this sort of approach available, and we might expect, once again, some uncertainty on the part of DTA linkers.

Tangibility vs. complexity. Any given piece of educational knowledge may be quite specific, concrete, and "thing-y", as exemplified in various "products" ranging from reading systems to set-ups for work-experience programs. Such "tangible" items tend to be usable "on their own," so to speak, and do not depend heavily on the nature of the user, or the complexities of the user's context. On the other hand, knowledge items may be rather complex, less tangible, more abstract, with their use more contingently dependent on the user, the situation, or other associated items of knowledge, as is often the case with scientific generalizations.

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* NIE did share this hope to some degree. The project officer said:
We genuinely did want to see if we could come to a position in between social science and anecdote alone, through use of intuitively understandable study methods, common language, etc. --"the best of both worlds,"maybe... We had seen big ethnographies going nowhere, and big data studies equally ignored.

DTA was clearly skeptical about highly-tangible knowledge ("The idea of a package...that wasn't *it*," one respondent said). And DTA was also dedicated to "richness" in its analysis of school improvement, and even with its bias toward ease of practitioner use of information, could be expected to attempt transfer of information that was relatively complex, and probably less specific than most R&D-developed products. After all, the very idea of "improvement of problem-solving capacity" was itself a complex, situationally-bound one, not easily susceptible to simple, straightforward formulation.

Informational context. Finally, there is the question of how any particular item of knowledge fits into a context of other knowledge, and how users get access to it. How organized is the information pool? A telephone number, for example, is one of thousands of similar numbers. People who want a particular number know that it can be quickly retrieved via alphabetical access methods, or through direct request to an information service. Any given program in *Educational programs that work* (U.S.O.E., 1978) is one of several dozen similar programs, and is retrievable by a range of descriptors ranging from program type to audience served; specific persons who can provide more information are identified.

Given the short time line of the DTA project and the complexity of the items being generated, it seemed likely that most of the knowledge to be transferred would be of a "stand-alone" character, not located in a systematically-organized pool. DTA expected to install a computerized retrieval system for the text of field researchers' reports of their observations, but it still seemed somewhat unlikely on the face of it that a linker would easily be able to find several alternate examples of, say, "methods for parent involvement" when a user requested them. The anticipated degree of organization of the knowledge pool was relatively low.

To summarize: the DTA knowledge base emphasized processual knowledge, mostly descriptive and prescriptive, with less emphasis on theory. It would be largely documentary and audio-visual. It was not clear how much confidence could be placed in the knowledge, though the aim was to base it in a creative blend of science and practice. Finally, the items in the knowledge base, itself not highly organized for user access, would probably be relatively complex and intangible. On balance, though the descriptive/prescriptive emphasis could be expected to make linkage efforts easier, almost all the other characteristics of the knowledge base would be likely to make for difficulty.

Nature of the User System

If we consider the ultimate users of DTA knowledge transfer efforts to be people in the schools receiving technical assistance, what can we say about their characteristics?

System type. Since the general aim of the NIE program which supported DTA was to understand how schools' problem-solving capacity could be improved, the user system should presumably be seen as an organization in need of help. Even though individual administrators, teachers or parents might be the targets of a linker's efforts, they were largely to be seen as inhabitants of an organizational context. The same can be said of specific groups (such as teaching teams, grade level groups, school-community councils): DTA was not much concerned with enhancing the functioning of individuals as such, but was mainly interested in building the capacity of an organization, including its subsystems and roles, to identify its problems, propose inventive solutions, put them into place, and to continue doing so. We might predict that one-on-one linkage efforts would be less frequent than those involving collections of persons from the same or complementary roles.

User purposes and motivations. The list of reasons why potential knowledge-users might seek information is very large.[12] A list of "rational" ones (Hood & Blackwell, 1976) includes:

(1) to improve one's own work by keeping aware of what others are doing;
(2) to identify new sources of assistance or new competencies;
(3) to evaluate or make specific decisions about educational practices or competencies;
(4) to make or set educational policy;
(5) to find answers, support decisions, or develop alternatives;
(6) to support scholarship (e.g., to gain theoretical information or to prepare formal reports);
(7) to teach and maintain instructional competence;
(8) to provide information to others.

To this list must be added a wide range of purposes and incentives, which, while decidedly rational, serve other than the virtuous goal of school improvement. For example (cf. Sieber, 1980), knowledge can be sought for largely *symbolic* reasons (to demonstrate that one is "up-to-date", for example), or for *self-aggrandizing* reasons (to advance one's career, regardless of actual competence or local system improvement ; or to strengthen one's position in a power struggle) or even for *irrelevant* reasons (wanting to prolong contact with a sexually attractive linking agent).

It is not wholly clear what we might expect the purposes and motivations of DTA's "users" to be. They had not actively solicited DTA's help.* They would be receiving free consultative assistance in a rather general domain (improvement of problem-solving capacity), without a very clear assurance that specific help would be forthcoming. The fact that the original 9 sites were all urban may have heightened expectations that the knowledge to be made available would provide "answers" and the particulars of effective practice, since people in most urban districts feel their problems are not only more acute, but in many respects unique; they can also justifiably point to the fact that available linkage structures such as the National Diffusion Network have done relatively little work in urban districts.[13] By and large, one would not expect potential user systems to be as excited about "capacity-building" knowledge as about more specific educational innovations; they might have to be persuaded of its value.* And if potential users understood the meaning of "problem-solving capacity" even partially, it would be clear to them that a good deal of hard work was ahead. Furthermore, unlike NDN, DTA did not have a large pool of potentially-interested users, from which the most interested would settle out. On balance, DTA's TA sites were unlikely to be eager clients, and DTA may have been more oriented to "succeeding" with the linkage mission than to meeting client needs as such.

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[12] We do not mean to imply that a perceived problem, information needs and search processes are a precondition for innovation adoption. Daft and Becker (1978) cite research showing that in up to 25% of user systems, an actual innovation entered the system first and *then* served to increase awareness of problems for which the innovation might be a solution.

* A DTA staffer who read this said:

> We wanted the "users" more than they wanted us. We had our backs to the wall (i.e., contractual agreements with NIE). I sometimes feel that we coerced users into the project. They expected only what we promised.

Another noted:

> DTA wanted to impose linkage. That is, DTA was not prepared to deal with the possibility that linkage, in and of itself, could not enhance problem-solving capacity or bring about school change. The manner and style of uniting [DTA and users] could not preclude knowledge utilization.

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[13] According to the NDN Reporter (November 1978) only 7.8% of innovation adoptions brokered by NDN have occurred in urban districts.

* Writing retrospectively in response to this study one DTA staffer said:

> Why should an urban school district, burdened down with descending achievement scores, sorely in need of staff training and development, and the bewildering bureaucracy get ecstatic over the data from the nine sites? And why should an urban school district, having been unduly "ripped off" by researchers, jump at the chance to help DTA/NIE find out if knowledge is used, if they couldn't see a relationship between the knowledge and what they viewed as their problems?

2

Stage of the improvement process. There are many formulations of stages or phases in a generally described process of educational improvement: most involve some variant of a general problem-solving process (problem identification, diagnosis, solution search, decision, implementation, recycling, etc.; cf. Miles & Lake, 1967) or of a general innovation-adoption process (awareness, interest, adoption, implementation, incorporation or institutionalization; cf. Rogers, 1962; Fullan & Pomfret, 1977). Knowledge presumably has different forms and different values at various stages, however they are defined. It seems likely that DTA's clients would be located at early stages of the school improvement process--at least as defined in relation to the improvement of problem-solving capacity. They would most likely be identifying and diagnosing problems, needing to have their "consciousness raised" (a phrase, in fact, used by DTA technical assisters), and would initially be far from ready to "adopt" whatever practices the DTA researchers located in the 9 sites that seemed promising, successful, etc.

Contact with linkers. User systems are not monolithic: typically, certain roles or groups serve as "gatekeepers," making the primary ties between the linkage system and themselves. Given DTA's emphasis on the improvement of problem-solving capacity, we can expect that district-level administrators would initially be the primary contact point, followed in importance by principals. Daft and Becker (1978), in their study of suburban high schools, found that 71% of instructional innovations were initiated by teachers who heard of them through professional contacts. But only 13% of administrative innovations started with teachers.

DTA never expected to limit its contact to administrators, believing that teachers (not to mention parents and students) would need to be closely involved in knowledge transfer and utilization. But teachers are not, initially at least, in a very good position to do much to alter organizational properties such as problem-solving capacity. The same seems true for parents, by and large: though DTA documents recurrently spoke of "school communities" and considered parents capable of exercising a good deal of influence as concerned stakeholders, the primary initial connection between DTA and its user system was still the administrator.

To summarize this section: the user systems who were to be DTA's clients were primarily organizations (school buildings and districts), with somewhat diffuse expectations and motives for seeking knowledge, sited early in the school improvement process, and connecting with DTA linkers intially mostly through administrators. They might (and as it turned out, did) need persuasion before accepting DTA's free assistance.

Nature of Linkers

What did the linking agents look like who would be aiding knowledge transfer in the DTA project?

Background and experience. The potential DTA linkers who were housed with the subcontractor (Center for Educational Policy and Management at the University of Oregon) had substantial experience in researching and carrying out school organization development (OD) programs, an intervention which emphasizes capacity development; most had well-developed consulting and training skills. Their previous experience in knowledge transfer tended to focus on social science knowledge (theories, principles, and practice derived from these). However, as acknowledged in the proposal, they had very little prior work or consulting experience with urban schools. Most were white.*

The linkers at the Center for New Schools had a different experience base. Many had done successful improvement work with urban schools, which had emphasized instructional improvement rather than OD; their formal training skills were less developed than those of CEPM staff. Their prior knowledge transfer experience had been mainly practice-oriented. Most were black.*

These differences, as the proposal had argued in relation to other CEPM/CNS differences, could be usefully complementary. But complementarity in relation to any particular user would depend on a joint CEPM/CNS linkage staff; as we shall see, this mechanism, launched early in DTA's life, did not survive. And, given uncertainty about the overall DTA mission, there was, it turned out, a tendency for both organizations to do more of what they could already do well, rather than collaborating to do something new.

As we shall see, a third potential base for linkers developed early in the project; it included four site researchers and a research coordinator based in New York. They had relatively little systematic experience with school improvement, training, or knowledge transfer as such. All knew urban schools; all came from various minorities. The New York group hoped to develop its own skill as technical assistance to schools, and carried out a series of "Type 1" linkage activities (knowledge transformation) which we shall review in Section V below. For now we should note that the New York group's capacity for direct linkage work with users was limited---and they had no actual clients from whom they could learn.

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* Race is mentioned here because it figured in conflicts within DTA. In addition, the TA sites had predominantly black students. It could be (and was) argued that experience and attitudes associated with one's race were conditioners of whether one could deliver TA effectively to clients of the same (or different) race.

Location of linkers. Just where linkers are based is important. Linkers are by definition marginal, working at the intersection of their own systems and the systems inhabited by users. Their marginality, while it has distinct advantages for the bearing of new knowledge and the promotion of change, also makes for insecurity. Thus much depends on the relation of the linker to his or her own "home system," and its character.

DTA linkers were based in a temporary system (the DTA project itself, with a five-year life which became increasingly less assured as the work proceeded). That temporariness probably reduced linker security somewhat, and certainly reduced linker credibility and effectiveness during efforts to transform the large, recalcitrant permanent systems (in Chicago and Bay City) who became DTA's clients.

Within this general uncertainty, there were some differences in linker "embeddedness" within immediate subsystems. The CEPM group at Eugene, for example, was a close, warm, supportive setting with norms supporting collaboration and openness. Yet, that very closeness, and the distance between Eugene and Bay City meant that the on-site staff member who served as the primary ongoing linker often felt excluded from decisions, and disconnected from the rest of the technical assistance staff. The CNS TA staff, existing in a conflictful setting, was itself troubled by internal conflict (see Holmes, 1977 for further discussion) and ambiguity about decision-making. The New York staff members, relatively close and cohesive as a group, were quite uncertain during most of their linkage work whether DTA management would ratify their bid to become technical assisters. On balance, the support conditions for linkers in the three linkage subsystems in DTA were not optimal.

Goals, purposes. We have already reviewed what DTA linkers were aiming at: supporting knowledge transfer (mostly direct descriptions, lore, strategic principles) collected from school sites to new, "user" sites. The wish was to be helpful, to improve problem-solving capacity, rather than, as we have noted, only to see if this sort of transfer could be accomplished. But given a general purpose of this sort (which itself proved difficult for DTA members to formulate cleanly), we should note a difference from linkers whose purposes are more bound up with utilization of particular products or practices. In one sense, it did not matter too much to DTA whether a user "adopted" the bit of knowledge involved (whether it was general, like a principle or a strategy, or more specific, like how to set up learning centers or peer tutoring programs)--so long as the effort had been made, and some judgment could be made that "capacity" had somehow been enhanced. So for many reasons, DTA linkers' goals were somewhat diffuse, and it was not wholly clear what it would mean to do a good job at linkage. (We might contrast this with the typical linker associated with the National Diffusion Network, who understands quite clearly (though with occasional grumbles) that s/he will be judged on numbers of adoptions, and perhaps on their durability.)

Ideology. The general value frame within which linkers do their work usually exerts a strong influence on day-to-day decisions and actions. For example, a linker who believes strongly in rationality and the importance of R&D-based innovation will tend to push particular educational products; a linker with strong grass roots leanings will downplay such items and encourage local invention and diffusion processes.

Here we can do no better than to paraphrase Smith and Dwyer (1979), who became much interested in ideology during their retrospective case study of DTA. Their analysis located several components in the DTA ideology: egalitarianism (seen as the core), self-awareness, self-expression (open communication), cohesiveness, participatory democracy (equal-status decision-making), loyalty, respect for pluralism and differing cultural perspectives, and holism, (the wish to pursue integrated, comprehensive approaches rather than narrow analytic ones). Smith and Dwyer label this an "alternative school" ideology; it has roots both in CNS's prior experience with alternative schools (CNS, 1975) and in CEPM's experience with organization development. We cannot review all the consequences of DTA's ideology here, but should note some that made a difference in terms of linkage efforts. First, egalitarianism (translated as a commitment to minority hiring) sometimes meant that linkers were hired who had minimal prior technical assistance experience;* it was probably expected that their skills of access to, their empathy with, and their collaborative stance toward minority personnel who were likely to be in key user positions would outweigh their inexperience.

Second, participatory democracy sometimes meant that linkers should mute their technical expertise, and assume that users' views were just as valid as their own, or as the knowledge garnered from the 9 sites. The credibility of DTA's knowledge, as we have already suggested, was less than solid, and equal-status assumptions could have promoted the implicit view that "whatever users think/propose is as valid as anything we think/propose." And the participatory ideology, during the knowledge transformation process, sometimes meant that long group discussions resulted in smoothing, cancelling out, or vagueness in ideas that needed to be sharp and clear (cf. the discussion of cross-site foci, Linkage Experiment # 3 below).

Third, the holism commitment made for a good deal of researcher reluctance to get specific, to identify particular practices or products for transfer to users, or to "impose" particular intellectual frameworks on the early data collection in the 9 sites; holism, too, in some respects, led to diffuseness.

(We should, of course, note that ideology had its up side as well: DTA linkers would be less likely to suffer from their own racism; they would not tend to alienate clients by imposing solutions, and they would stay open and creative longer than a linker with dogmatic, specific commitments. But the difficulties encountered by DTA during its life were substantial enough to suggest that the dysfunctional aspects of its ideology had greater weight.

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* After reading this, the DTA manager objected:

> [this]..completely misses what happened from my perspective. I did not hire minority staff for egalitarian reasons. My prime purpose was [that] I felt it was crucial to the purpose of DTA to have new and minority perspectives on research and schools. I did not see that I was hiring staff with deficits that had to be compensated, but rather with strengths that were key to the problem of the project....Now, my assumptions may have been silly, but for me they were the issue. I get mad when the commentary on minority hiring slips into a ridiculous discussion of competency of minority staff without considering the purposes of the project.

In brief, then, the DTA linkers had uneven prior experience with linkage roles and urban schools, were functioning with less than optimal support from their own subsystems, were aiming at somewhat diffuse goals, and had an ideology that may have contributed to inexperience and diffuseness.

Nature of Linker-User Transactions

How did DTA linkers and their counterpart users come together? What were their working relationships like as linkage efforts proceeded?

Linker entitlement. As a special sort of change agent, in a marginal position, linkers need credibility, legitimacy, the right to help, or what Butler and Paisley (1978) have called "entitlement". Butler and Paisley suggest that entitlement, a combination of legitimacy and the content of role expectations, may exist at three levels of intensity: (1) resource finding, where the linker has only the right to broker information, or serve as an intermediary between a knowledge base and users; (2) process helping, where the linker may also supply technical or "human systems" facilitation; and (3) solution-giving, where the linker is supplying, and often advocating, particular answers (educational programs, practices, etc.).* Entitlement arises in part from the reputation of the linkage organization, and in part through actual, success-providing interaction with users.

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* The NIE project officer reflected after reading this:

> What about the knowledgeable person you get a lot out of talking to, who has seen "this sort of thing" in many other contexts and can complicate your own view of the situation you face -- without brokering, process helping, or telling you what to do? That's what I thought DTA might do... though damn if I know how you start that sort of conversation, gain the trusted access.

Though DTA linkers could point to their Federal funding, and to the history of their parent organizations (CNS and CEPM) as providers of assistance to schools, they were not in a position to invoke membership in a wider network of linkers (like the state facilitators of the National Diffusion Network, a structure in place since 1974.) Nor could they claim the right to be solution-givers through extensive prior developmental work (like the developer-demonstrators of the NDN).* Their entitlement had to depend on the richness and validity of DTA's documentation in the 9 sites (and on whether this could transcend users' doubts about "research")--and on their own skills of entry, access, trust-building, and "contracting" with users. DTA linkers' awareness of this problem may have underlain their decision (see below) to begin entry to user systems well in advance of the time when transferrable information was in fact available for them to use.

Routinization. Many linking agents, particularly those associated with particular innovations (NDN again) and those closely associated with a systematic information service (Sieber et al., 1972) develop relatively standardized routines for work with users: awareness conferences, demonstrations, information searches, steering committees, etc. Such routines not only minimize unnecessary expenditure of energy, but add to linker security and entitlement. The routines often have materials associated with them, a feature which Moore et al. (1977) found was an important aspect of successful change agents' work, partly because they embody expertise.

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* However, the Chicago TA manager did have credibility through prior work with the Chicago schools, and thus probably had more entitlement than the CEPM TA staff did with Bay City, where they had not worked previously.

In contrast, much of DTA's linkage work might be characterized as "customized": most linking efforts were initially conceived as hand-tailored events, mainly because of the complexity and novelty of the enterprise. Routinization might come later (and there were clear intentions to produce reusable materials, training designs, etc.), but the transfer problems were large enough to make routinization something for the future. There was also an ideological bias away from standardization ("not a package necessarily...we didn't want to be seen as having the answer.."). [14] DTA could probably expect to expend more energy than more routinized linkers, both during the entitlement-building process and during "delivery" of knowledge. And linkers' roles would probably remain somewhat vague, inexpert, undefined in their own and users' minds.

General strategies employed. Linkers ordinarily have a general set of organizing ideas behind what they are doing, which is more or less explicit: it is a sort of policy-in-use.

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[14] The "customized" aspect of DTA's work probably also derived from the fact that its users existed in a "free field," and were not a quasi-captive audience. Many technical assistance systems, such as those for special education (Stedman, 1975), early childhood programs (Lillie & Black, 1975), Title I migrant programs (Treadway, 1977), or NDN developer-demonstrators themselves (Harris et al., 1979) are set up by an agency which has funded a series of similar projects. All the projects are seen as potential clients of the technical assistance contractor; all projects share certain common characteristics and strains, and routinization of linkage activities is more likely. See also Brickley's (1979) discussion of how much easier linkage work is for linkers who have a durable "constituency", a reasonably stable set of clients for whom ad hoc, entrepreneurial efforts are unnecessary.

Perhaps the most basic aspect of the DTA linkage strategy is that it was defined as occurring through *face-to-face technical assistance*:[15] options such free-standing media or unassisted visits or demonstrations were excluded.

One of the classic categorizations of change strategies (of which linkage strategies are a sub-case) is that made by Bennis et al. (1969): rational, normative/re-educative, and power-coercive.

Generally speaking, the DTA strategy's *core assumptions* were "normative/re-educative," with a bit of rationality thrown in. That is, DTA linkers hoped that the research information from the 9 sites could be seen and used for its intrinsic worth, but placed more chips, so to speak, on the bet that a good deal of training, support, and re-orientation of organizational processes would have to go on during the linkage process. By and large, coercive or power-oriented assumptions were missing (or, as one DTA staffer said, "avoided with vigor").

Zaltman et al. (1977) cut the strategic cake somewhat differently, emerging with power-oriented, rational and "manipulative" strategies: the latter involve arranging communications and the environment so that clients come to see things differently, and/or behave in different ways. Though DTA staff would have rejected the "manipulative" label, their strategy was in many respects persuasive (urging the use of new knowledge) and facilitative (arranging things to make change easier), both of which fall into Zaltman et al.'s "manipulative" category.

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[15] For this reason, it is not always easy to distinguish "linkage" from "technical assistance" in DTA documents and events. Sometimes they seemed conconceptually identical: TA *was* the basic form of linkage. At other times "linkage" implied knowledge-bearing activities, with "technical assistance" reserved for activities like support and facilitation. For practical purposes, TA staff felt obligated to do both sorts of things (when they indeed differentiated them). The discussion of linkage strategies which follows does not attempt to distinguish linkage from TA cleanly.

It can be argued, as one reader of this paper suggested, that knowledge-bearing, knowledge-transforming activities and direct site-assisting activities are separate activities, requiring radically different skills, usually not found in the same person. If that is true, it suggests one more difficulty in the DTA linkage task.

"manipulative" category.

In general, it also seems fair to say that the implicit model (Hood & Cates, 1978) being followed in DTA was a "linkage process model," emphasizing a reciprocal problem-solving dialogue between a knowledge or "resource" system and a user system which has methods for identifying and processing needs, and for identifying and processing solutions to those needs. Other models which DTA was not espousing include classical RD&D (research, development and diffusion), social interaction (innovation diffusion within networks)*, action research (reflexive inquiry without an external knowledge base), and therapeutic intervention (reduction of emotional barriers to rationality).

Strategies can also be characterized by the "carrier" or vehicle of the work with users. As it turned out, the linkage done by CNS with the Chicago schools was "carried" by particular content-oriented projects/innovations such as peer tutoring and open-corridor teaching, while the linkage work at CEPM with the Bay City schools was more "carried" by process matters--generalized skills and procedures like those taught to users in previous CEPM organization development projects, and in at least six of the nine sites.

Strategies can also be sorted by their outcomes--what they aim to leave behind. DTA clearly wanted to change its clients - not just to confirm (or challenge) their preconceptions. Though "problem-solving capacity" was the general desired outcome, DTA expected to have ultimate impact on persons (their cognitive maps, motivation, skills); or organizations (norms, structures, and procedures relevant to problem-solving functions); and on change facilitators (persons internal to user systems who would continue to carry out changes, support improved problem-solving capacity, etc.) The CNS team tended to emphasize personal change,** with some attention to organizational outcomes; the CEPM group stressed organizational changes and the development of internal cadres.

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*We should note that the encouragement of diffusion through networks was contemplated as part of the Phase III DTA design, but was never carried out.

** After reading this, the DTA manager said the team was very clear on its organizational purposes. An early planning document does list "target states" such as "a tradition of systematic planning" and "organizational patterns that allow and encourage teachers to help each other." But the same document phrases most of its finally-formulated goals in personal terms: "teachers will demonstrate greater skill in implementing teaching/learning strategies"...."teachers will share their knowledge and assist other members.."

Finally, and a bit more precisely, strategies can be characterized by their educational scope. Pincus (1974) suggests that strategies can be sorted by the sorts of school operations they are expected to have impact on:

1. Increasing the level of resource use (ex: more classrooms, reducing class size).
2. Changing the resource mix (ex: teacher aides, use of equipment rather than people).
3. Changing instructional process/methods without changing the resource mix (ex: a new product, or a new curriculum in a particular subject area).
4. Changing administrative management, without significant effects on organizational power structures (ex: PPBS, new evaluation methods).
5. Changing the organizational structure, or the school's relation to external authority (ex: team teaching, school-community councils).

The intended scope of DTA's linkage strategies was probably more at the "higher" levels of this scheme, specifically 4 and 5; it would be unlikely to see much improvement in problem-solving capacity as such at levels 1 through 3.

Linkage functions mix. Linker-user transactions can be categorized into (at least) the following seven categories, three of which we have already discussed in the section on "entitlement".[16]

1. Developing, transforming, packaging, synthesizing knowledge: making the knowledge base coherent and usable.
2. Locating knowledge for the user (search, retrieval, based on user need).
3. Delivering knowledge (transporting, passing along, informing, explaining).
4. Giving or advocating solutions (advising, encouraging the adoption of particular knowledge as a solution to a user problem).
5. Aiding with adoption of solutions (catalyzing the user's decision to use the knowledge).
6. Aiding with implementation of solutions (supporting the user's efforts to build the knowledge into ongoing operations).
7. Process helping, generalized capacity-building effort beyond that needed for 5 and 6.

Note that transactions 1 and 2 tend to face away from the user, so to speak:

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[16] This draws on Butler & Paisley (1978) and the Belmont Conference Report (1980).

the linker is primarily occupied with the knowledge base and its usefulness for a user problem. Transaction 3 is essentially neutral: the linker is only "giving the news." And transactions 4 through 7 imply active engagement with the problems and vicissitudes of the linkage effort and its aftermath in the user system.

Generally speaking, DTA expected to carry out all of the functions noted (again ambitiousness). Function 7 was presumably a sine qua non, given the capacity-building emphasis in the RFP and the proposal.

As it turned out, much DTA linkage energy went into functions 1, 2, and 3, the "front end" of the linking agent's work, and less into 4 through 6, where adoption and implementation issues are more central.[17] Function 7, less tied to specific pieces of knowledge, also occurred to some extent.

Interactions between linker and user systems. These can be characterized along three dimensions.

First, DTA expected its interaction with users to be decidedly proactive: it would not be passive or neutral, but would take initiative, actively seek clients, reach out to them, not wait to be asked.

Second, DTA expected to have intensive contacts with clients, working with them frequently and over a substantial time period (several years), in considerable contrast to linkers whose contact may include only the brokering of a few pieces of information (Louis, 1977).[18]

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[17] Here again, there is ambiguity: are functions 1-3 only to be called "linkage," with functions 4 through 7 labelled "technical assistance"? Or are all 7 functions "linkage"? DTA was not clear on this matter, nor, for that matter, is the literature.

[18] Louis found that linkers with "intensive" client contact before and during the transfer of information were seen as much more helpful by their clients--even though her measure of intensiveness ranged from "0-15 minutes" to "over 60 minutes" of linker-user contact. She proposes that intensiveness is especially important for the development of socio-emotional ties between linker and user. (A DTA staffer who read this pointed out Runkel et al's (1975) finding that 25 hours of contact appears to be the minimum required for success when the "user" is a system receiving OD intervention.)

Third, DTA expected to work with a relatively small number of clients, as its intensive mission required. Preliminary linkage work was carried out with only two user districts , and the intent was to expand this only gradually.

We might note in passing that proactiveness and intensiveness, coupled with some other features we have noted (goal uncertainty, diffuseness and ambitiousness, non-routinization, inexperience) would be quite likely to make for a good deal of unclarity, inconsistency, overload and role strain on the part of DTA linkers.

To summarize this section: we note that the linker-user transactions contemplated by DTA were not easily or automatically legitimated or "entitled," were not particularly routinized, were mainly seen as face-to-face, with a normative/re-educative flavor involving shared problem-solving. They were largely aimed at altering organizational capacity, involving proactive, intensive contact with a small number of user systems. As it turned out, the linker-user transactions DTA carried out tended to emphasize knowledge transformation and transfer, more than assistance to knowledge utilization by clients.

DTA thus represents an interesting and ambitious effort in knowledge-practice linkage: it was undertaking tasks which have by and large not been attempted systematically before, and eschewing narrow, mechanistic views of linkage. How, in fact, did DTA's efforts turn out? The next section provides a brief chronology of DTA linkage work, and discusses some of the barriers (and aids) to effectiveness encountered.

IV DTA: The Immediate Context for Linkage

Brief Chronology

A paper of this length cannot possibly do justice to the vicissitudes of a 3½-year project conceived with as much ambition and complexity as DTA was. For more detail, the reader is referred to Smith & Dwyer (1979); Smith & Gregory (1978); Eugene-Oakland Consulting Team (1977a); Holliday (1977); and Holmes (1977a). Here we aim only to describe the main flow of linkage-related events and processes during DTA's life.

Phase I.

DTA was launched in January of 1975. Phase I, lasting 21 months, was to be primarily devoted to documentation in the 9 original sites, and to the development of initial contacts and rough plans for linkage and technical assistance with new user sites.

Project organization. DTA was set up to include several task-oriented teams; the teams for Task 1 (documentation), Task 2 (cross-site analysis), Task 3 (technical assistance) and Task 4 (reflexive self-study of assistance to users, including the linkage process) are most relevant for our purposes.

Coordination problems. Membership on teams 1, 2, and 3 overlapped somewhat and included people from both research centers (CNS and CEPM), but as early as February 1975 it was clear that problems of coordination between Task 1 and Task 3 were beginning to appear. And by July, when site researchers had been hired and had attended preliminary training, interviews before a staff retreat turned up worries such as:

> We're heavily invested in Task 3, but it seems difficult to get the attention of the Chicago people...they are falling behind on /it/.
>
> We need some kind of link-pin activity across Tasks 1,2,3, And build some cohesiveness within teams.
>
> Clarify influence. Task 1 should shape 3, as well as 3 influence 1.

> We differ on kinds of variables, subjects treated, kinds of information useful in Task 3.*

Even after the retreat, there were concerns:

> The important interface of Tasks 1 and 3 remained vague.. DTA must find ways to get people on the two teams together and feeling mutually influential.
>
> We still haven't discovered the best way to build this interface..We can't afford to build the ideal links.. there is a tension between the need to consolidate the working of each group and the need to include people from other tasks.

Part of the problems stemmed from intergroup difficulties between CNS and CEPM, and the geographic dispersion of task group members. But perhaps the larger part came from the considerable degree of pressure and overload being felt by all task groups. Task 1 members (research coordinators) were preoccupied with hiring and training inexperienced site researchers, arguing endlessly over coding schemes and conceptual frameworks, gaining access to sites, and designing a computer storage and retrieval system for researchers' "Field Data Forms" (accounts drawn from their raw notes). Task 3 members were worrying over what technical assistance would look like, what information they might want from Task 1 documenters, how many sites they could work with, what criteria to use in choosing them, where sites might be, and when entry efforts should start. (Entry to the Bay City site had actually begun in May of 1975 and Chicago's participation was assured by that fall. Task 3 members knew they had to cultivate possible user sites well in advance of the time when usable information might be available for "linkage" purposes from the Task 1 researchers.) No one had enough time, and in-group concerns took precedence over coordination between the teams. Meanwhile, Task 4 ("study team") members were preoccupied with starting up their own internal documentation of the entire process. It did not help that the Task 4 head, with few staff to help, was also working on Task 3.

Efforts to improve coordination, which included liaison members between Tasks 1 and 3, were not easy: one research coordinator said that site researchers should have "the right to refuse Task 3 requests if time and energy do not allow for the collection of that information," even though another coordinator said "Task 3 requests should be seen as part of the documentation work rather than something separate." And it was not clear whether the budget would permit cross-attendance at task group meetings, even though by October the Task 1 manager was urging greatly increased face-to-face work between the two groups, and was concerned about influence:

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* A DTA staffer who read this noted that he felt the RFP's emphasis on practitioner audiences had never fully been accepted within DTA, and that disagreement and misunderstanding about this further hampered linkage work.

> ..how likely is a Task 1 person to stop the forward progress of a Task 3 work group to tell them that they've totally missed whole areas? Even if a person did, how much influence would it have on a group that had already socialized itself not to ask certain questions? Similarly, how easy is it for a Task 1 group to stop and listen to a Task 3 person?

Yet he worried just as much that:

> ..already the site researcher's job is impossible. One person is hardly enough resources to study complex urban settings..if we move in the direction of involving site researchers even more in Task 3 they will have less time to study their sites and experience even more frustration than they do now.

The NIE project officer was also worried about linkage: in an October 9 memo he reported his concern that Task 3 members were mistakenly

> trying to develop "the most effective intervention there can be into school communities." ...we continue to believe that the work of Task 3 must start from questions about how experience can be effectively transferred. Helping users must be based on various ways of using the fruits of the elaborate research and analysis system that is being set up under Tasks 1 and 2.*

And he too was anxious about the timetable:

> The pace of developments, understandable as it is, still leaves us concerned that Task 1 and Task 2 do not view themsleves in a position yet to offer any guidance to Task 3 about foci of interest. We see, in effect, Task 3 establishing its own data-gathering and analysis system (through the site-by-site liaisons) to make up for shortcomings in the state of Tasks 1 and 2. ...We are in general concerned that Task 1 and 2, in whatever stage of development, be a far more active force than at present in informing Task 3 plans and designs.

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*One experienced linker who read this study noted that the working assumption here resembles that encountered in the development of other information systems (e.g., ERIC), which were dominated by knowledge-producers and knowledge-transformers, rather than by users. Users' language and needs, he argued, should drive the development of linkage systems.

The memo also pointed to the serious delay in Task 1 data processing (notes not transformed to Field Data Forms, a backlog of uncoded forms, and unwritten computer programs for text retrieval), but pointed out that much information was "in the heads" of research coordinators and should be made available for Task 3 planning.

A two-day Task 3 meeting in October began with acknowledgment of problems. The Task 3 leaders noted:

> ..there seems to be insufficient understanding and incomplete agreement about the research utilization focus of the project..[including]... inadequate linkage and a lack of reciprocity among Tasks 1, 2 and 3. Tasks 1 and 2 have not initiated help in Task 3. The site researchers are poorly linked to Task 3. Task 3 has developed Wave 1 [the first technical assistance work] without input from Tasks 1 and 2.

The meeting dealt with many issues, including the need for cleaner conceptualization of linkage, and formulation of technical assistance plans; it also dealt with the Task 2 requirement that a set of "cross-site foci" should be developed to guide researchers' attention toward issues thought to be most fruitful for technical assisters' use, and a modest structural change: each research coordinator would have regular interaction with a Task 3 "link person," who was expected to read Field Data Forms regularly. But the situation was still not optimal.[19]

Substantive and structural focusing. By February of 1976, the stage was set for a DTA-wide conference at Woodstock, Illinois, to work on conceptual issues and settle on a list of cross site foci, which were defined in a memo from the Task 3 (technical assistance) team as:

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[19] An advisory memo I wrote in late October said:

> ...in spite of really valiant efforts to clarify 1-3 working relationships, they are still not what people want them to be...and the conceptual basis of the project, seen corporately has not advanced very much from the original concept.

All was not gloomy: I also said:

> I am impressed with the amount of good will and energy, with the capacity to bind tension, and with the DTA system's ability to learn from its difficulties and expand its own capabilities..

> ..statements that tell [users]..about the kinds of knowledge they can retrieve through DTA's system of technical assistance and products. They posit relationships among concepts that are tied to critical activities....[and will] meet the needs of the TA team for information to be used immediately in Phase I technical assistance in Oakland and Chicago through November 1976..they will[also]predict the needs of [users]and will influence DTA technical assistance offered in Phase II...foci will influence and predict the products we need to develop as well as lend commonality and comprehensibility to case studies from the funeded sites.

The nature and usefulness of the cross-site foci as a method of aiding linkage will be discussed more fully in Section V, Section 3 on linkage experiments. Here it is enough to say that the Woodstock meeting, though it was marked by very severe conflict over issues of race, sex, status, task group differences, and methods of project decision-making, did emerge with a set of (rather politically watered-down) cross-site foci, and the creation of a new structure: a "linkage decision-making group" with the power to create and finance a series of "linkage experiments" to be carried out over the next few months by temporary groups including both technical assistance (TA) and documentation (DOC) members. Most of these experiments, which were designed by April, plus a few that emerged later, are described in Section V.

External review. The Woodstock meeting also critiqued draft papers on "problem-solving capacity" and "technical assistance." But a small group of reviewers engaged by NIE,*who had read the papers and visited various DTA offices and sites during the spring, was critical. Extracts from notes of their May meeting include:

> --DTA does not have a good map of what kinds of knowledge it is utilizing (concrete, abstract), or the modes of knowledge transfer (direct, indirect).
>
> --Knowledge utilization seems to have gotten defined as occurring only in the context of technical assistance...

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*They included researchers from the University of Illinois and the Ontario Institute for Studies in Education, and school administrators from California and Connecticut.

--There doesn't seem to be anyone in the project really trying to understand local problem-solving and how it works.

--DTA must remember that the research it does has got to be valid, or it will not be useful to other practitioners. As DTA is now set up, a site researcher could turn in false, non-valid data.

--DTA is not clear how much energy it should be putting in on technical assistance, and help to users, as versus developing knowledge on problem-solving processes.

The reviewers also noted:

--TA and documentation seem "grossly separated"; the present structure maintains this, and the linkage group's efforts so far are of unknown value.

--Unless data analysis can move faster, it won't be of much help to TA.

--The original timetabling (TA used to test the results of data analysis) is out. Implication: either slow down data collection and speed up analysis, leading to theory usable in /new/ sites, or reconsider the role of data.

Finally, the reviewers also advised DTA to spend more energy in clarifying its purposes and audiences, and to consider the possibility of reorganizing for the coming Phase II (with attention to role ambiguity and overload, decision-making methods, regionalization and relation to NIE). They also thought the present data analysis and management schemes needed reconsideration. At one level, the reviewers' advice could be discounted as being overly critical, as well as too comprehensive and global; at another, it seemed likely that some of the consequences of DTA's linkage mission (its ambitiousness, non-routine character, lack of legitimation, intensiveness, etc.) were coming home to roost.

Technical assistance. By this time, technical assistance work had been actively under way in both Bay City and Chicago for several months. The Bay City work had involved preliminary visits to many schools, and introductory workshops on problem-solving and educational change for teachers and principals who were in Title I schools. Bay City was going through a substantial reorganization following the sudden death of its superintendent and the hiring of his successor, who created an "instructional strategies council" model (both school level and district level), a range of instructional task forces, and a new role, the "instructional assistant principal". The Eugene TA staff provided preliminary consultation to the councils, to some of the task forces, and to their leaders; got acquainted with the problems and issues in three elementary schools, and aided in the planning (and operation) of a summer workshop for members of school-level instructional strategies council members.

In effect, the strategy was one of supplying immediate assistance--often involving consultation on group and organizational processes--as a way of making entry to the district. More detailed TA plans for the 1976-77 school year were also formulated. (See Francisco, 1979, for more detail.)

In Chicago, the TA team worked with the District 21 instructional support staff; carried out a workshop on early childhood screening methods for a pre-school center; held a workshop on "open corridor" methods with the faculty of one elementary school, sponsored a workshop on parent participation with another elementary school (both being explicitly-designed linkage activities), and planned (and carried out) a district-wide workshop on peer tutoring held in the summer. These activities, aimed more at specific instructional issues than the Eugene-Bay City team's work, were seen as congruent with the Chicago TA team's belief that effective education for black students in urban schools should build on their historic "cultural strengths" rather than on implicit models of "educational deficit". The Chicago TA team, too, designed a general plan for its work during the coming year.

Plans for Phase II . The DTA staff met in Boulder in July of 1976 to finalize plans for Phase II . The criticisms of the reviewers, and the concerns of staff members made it clear that serious effort was required to support the "linkage" mission. For example, the Chicago TA director noted in a memo:

> The concept of "knowledge utilization"--the debate between Documentation and Technical Assistance, continues and escalates. We should consider seriously the shifting needs of the /user/ sites and the effectiveness of /the 9/ sites in achieving their goals and in providing help to /user/ sites.

Here she was, in effect, raising the issue whether there was enough successful experience available from the 9 sites to be of help (several site researchers had already made plain their view that the change strategies they were documenting were far from successful). And she wondered too whether the cross-site foci were really helpful, whether the computer retrieval scheme (it had only recently started to become operational) could be useful. Finally, she pointed to "discontinuity" and lack of consistency between the Bay City and Chicago efforts.

The Boulder meeting resulted in a decision to centralize general DTA management at CNS in Chicago, reducing the strains that dual management (CNS and CEPM) had involved. More crucially for the linkage session, the decision was also made to "regionalize" linkage and technical assistance efforts. The Eugene-Bay City and Chicago groups would henceforth pursue their own TA programs without attempting to coordinate them, while the New York group of researchers would continue in its efforts to consolidate learnings through holding a series of "linkage seminars" (Section V, Part 9) around data from all 9 research sites. New York would also produce a major paper on strategies for facilitating the development of problem-solving capacity.

For each region, a new role was created: former research coordinators, based in the TA team, would become "TA-DOC linkers," serving as "the gateway to the 9-site data" for the TA effort. They would, according to a memo:

> have the responsibility for learning about all nine sites through reading case studies and data as well as through other means, such as visits. They are also responsible for using this DOC knowledge in the design of TA.

The TA-DOC linker role is also discussed more fully in Section V, Part 7 of this Study.

The role of site researchers also shifted. Up to 40% of site researchers' time was to be available for "linkage" work, with the remainder devoted to the completion of case studies of their sites; their work would now be centrally coordinated through the main DTA office in Chicago.

The Study Team would continue its documentation of the linkage and technical assistance efforts.

The centralization of management and the DOC function, along with regionalization of technical assistance and linkage efforts, could be (and was) variously seen. For many DTA staff, it represented a welcome relief from the inter-center conflicts, and the strains between DOC and TA, as well as a chance for more autonomy in carrying out difficult tasks. But an advisor wrote:

> Helpful as the organizational changes may be in some ways, I don't think they are terribly likely to be helpful in ways which bear strongly on the substance of the organization's work.

He went on to explain that given "diffuseness and tension in DTA's mandate" and "mismatches between the /enormous/ task and the /inexperienced/ staff," he believed the regionalization, in particular, would weaken the already less-than-clear conceptual grasp of the knowledge utilization issues involved, and "reduce intellectual exchange and /productive/ intellectual and ideological conflict." He noted in a later memo that the plan would also place much stress on site researchers, that it still had an unrealistic schedule, and that, except for the Eugene-Bay City section, it had weakly-defined substantive plans for TA, linkage and documentation work.

Phase II.

However, the inhabitants of systems do not always see themselves and their futures as external advisors do. Phase II was set up largely as it had been envisioned at Boulder. It was projected to last for 16 months, from October of 1976 through January of 1977.

Conceptual diffuseness. Generally speaking, it appeared that DTA staff were still less than clear in their own minds about the conceptual dimensions of the process they were labeling "linkage". An October 11 staff meeting heard a presentation from the Study Team on how "information" might flow to and from DOC and TA to user sites, being selected/translated in the process, but a question on what "information" meant led only to vague responses like "hunches," "large chunks of data blocks" and the possibility that categories such as "abstract/concrete," "forms," and "ways questions get formulated" might be used. And though there were questions about stages of knowledge utilization, and the suggestion that the process should be formulated using Havelock's (1971) ideas, nothing became very clear, and the discussion concluded with comments like:

> It's very difficult to unravel.
>
> We know it's complicated and hard.

Some of this vagueness stemmed from inexperience, some from participatory approaches to research planning, and some from tensions inherent in the DTA task. The DOC team manager mused in a late October memo:

> When people are working out there in the schools where parents, teachers and students are hurting, there's an immediacy about it. It is hard to justify spending time, energy, money, thinking, ruminating, going into the literature, etc. when there's a chance that we could actually be doing something that might help. I feel this tension in me and I feel it strongly in the DTA milieu.

In a sense, then, the very requirement in DTA's mandate that knowledge be "useful" to TA efforts may have driven out careful analysis. The memo went on:

> I think there is little tolerance for the more long-term, less apparently relevant kind of work. E.g., while the /Chicago TA group/ seem to respect me and other DOC people and find our stuff occasionally useful, I feel a strong push against the more abstract mode of analysis....I think it will cut out an important potential from DTA. Maybe this is the price we pay

> because that mode of research has so long been associated with people who have no touch with reality and who have served the racist tendencies in our society.

The final comment illustrates an aspect of DTA's ideology: willingness to reject "traditional" research modes as unrealistic, in need of basic reformulation, and even racist. CNS staff were more prone to this than CEPM's. Such rejection undoubtedly made DTA's work even more difficult than it already was.

The Synthesis Conference. In late October, there was a DTA-wide "Synthesis Conference" aimed at bringing together what had been learned from the enterprise since January of 1975, to provide a planning base for the projected Phase III, in which technical assistance work would be substantially increased. The primary substantive issues dealt with included:

> What is the nature of practice in schools?
> What are the features and processes that would best describe an urban school which had developed capacity for organizational problem-solving?
> How can knowledge be generated and passed on to practitioners so that they can make maximum use of that knowledge?
> How can a group external to local schools facilitate the development of a problem-solving capacity in local/urban schools?

The Synthesis Conference (which involved discussion and critique of a number of DTA papers, analysis of the issues above, and extraction of "propositions" describing DTA learnings) was itself a major linkage activity, and will be described further below in Section V. We should only note here that while the conference did serve a useful, stock-taking purpose, it did not significantly advance the state of DTA's knowledge about, or capability to do, linkage. In a memorandum shortly after the conference I wrote:

> The Synthesis Conference provided social support, and hooked many new members of the system in, but did not provide a clear or crisp summary of Phase II learnings and implications. There is a good deal of raw material, but much of it is woolly and unformulated. The steps toward mapping out learnings were only halting and partial.

> Old DTA ideology about participation and group discussion (which is partly tied to the race issue) tends to recur from time to time; it both hampers intellectual work and leads to grandiose and vague discussions...The ideology at its worst interacts with staff inexperience so that ideas are both fuzzy and trite.[20]*

Some other comments from the same memo reflected my view of DTA's status:

> There is in principle a reasonably good data base from the 9 sites which can be drawn on for good products, as the paper by Hyde (1977) demonstrates.
>
> /But/ the TA efforts in Bay-City and Chicago were both largely driven by prior assumptions and models, and minimally informed by linkage efforts to the 9 sites.
>
> The TA efforts have not, by and large, succeeded so far in increasing "problem-solving capacity" in any very clear, unambiguous way. The barriers to knowledge utilization, linkage, etc...are more in evidence than are answers to how to do it well.

After noting the continued difficulties in achieving a good complementarity between CNS and CEPM, the problems of staff inexperience, and black-white tensions, the memo notes, however:

> There is plenty of energy and good will in the system. People work hard and care about what they are doing. I do not ever get a feeling of foot-dragging, sabotage, etc.

---

[20] It should be noted that not until late February of 1977 (two years into the project) did there emerge anything like a DTA-wide set of working definitions for such concepts as "problem-solving capacity" and "knowledge utilization." And even then there was considerable lack of clarity. For example, the definition of "knowledge utilization" looked like this:

> The gathering and organizing of ideas and experiences within and outside a system. These ideas and experiences may be catalytic or integral to systemic change and school improvement. The gathering and organizing process is influenced by perspectives and experiences of researchers and practitioners within and outside the project, through ongoing exchanges and reflection (currently called "linkage" in DTA).

It was agreed this definition needed amplification to include the ideas of retrieval/transfer/applicability of knowledge, to the fact/theory/lore distinction, to stages of transfer, and to mode (face-to-face vs. written/oral). But the whole exercise has the flavor of a consensus-model, something-for-everyone approach to ideas.

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* A DTA staffer who read this said the poor output of the Synthesis Conference was in large part a consequence of the presence of many new staff members, who had to be "educated" about DTA; the "participation" ideology was re-evoked by their needs. "The faces changed, and brought the problems back."

Even so, the memo warned:

> The present array of products varies considerably in quality. DTA can probably expect outside reviewers to recommend a good deal of tightening and clarification, and better tie to the data base. Some papers will be seen as simply unacceptable, unsalvageable, etc. NIE continues to feel that DTA's products are poor, by and large, and hopes fervently that a Phase III plan will emerge which will justify the original expenditure and bring the Phase I and II experience to fruition. There is probably some acknowledgment that the original hopes for the project were far too ambitious.

Technical assistance and linkage. Against this backdrop of intellectual uncertainty and mounting pressure for "production," the work of linkage and technical assistance continued over the 1976-77 school year.

The Bay City technical assistance work included workshops on parent involvement and math materials at one elementary school, along with joint review of some DTA case studies; active work with parents and faculty on parent involvement in another elementary school; work on a parents' "school-within-a-school" in still another elementary school; team building with counselors in a high school; and district-wide workshops for the newly-appointed "instructional assistant principals"; plus team building work for three junior high administrative teams skill training for co-chairs of curriculum development task teams, and design of a Summer Workshop for 40 schools on use of new curriculum guides.

The Eugene-Bay City team's linkage work included "consciousness-raising" efforts through brief handouts ("How to develop an effective neighborhood school board") synthesized from the 9-site data; a slide show on parent involvement). It also included the use of retrieved information specific to school-identified needs (for example, visiting resource persons from a DTA site who discussed their experience with parent participation; a diagnostic questionnaire for assessment of team functioning). It is fair to say (a) that the technical assistance work was not centrally based on the linkage efforts, but on past successful strategies of the TA team; (b) that the TA work had some effect on parent involvement, a modest effect on problem-solving capacity, and probably some on instructional improvement (Since such activities were central in Bay City anyway during the TA work).

The Chicago team's technical assistance work during 1976-77 included an additional workshop on peer tutoring for one elementary school, along with a series of workshops for teachers and parents on open-corridor teaching, with help on setting up resource centers; workshops on parent involvement and career-based education in a middle school; and several workshops and a summer institute for teachers and parents centered around the idea of "building on cultural strengths." The primary linkage method used was bringing participants from a DTA-studied site to make direct presentations to seminars and workshops, sometimes supplemented by pictures and videotapes. The Chicago TA team's work seemed to arouse a good deal of interest and enthusiasm in participating parents and teachers. It was unclear how much durable effect it had on problem-solving capacity, or parent involvement. There were probably some instructional effects: though the open corridor experiments, with 12 teachers on two floors, did not continue in the fall of 1977, the peer tutoring program was in place then, and continued to 1979.*

The New York staff's linkage work during 1976-77 involved a series of twelve seminars, bringing together site researchers, TA staff, consultants, (and occasionally teachers and administrators from some of the 9 sites). The topics included community accountability, the professionalization of teachers, the school as a well-functioning organization, and the principal as educational leader. The seminars were aimed at synthesizing existing data from the 9 sites, and at linking data to TA problems and issues, and were to lead to the production of papers on problem-solving, as well as to the improvement of TA work and further data analysis. We discuss the seminars more fully in Section V; here we note that they increased personal contact and understanding somewhat between TA and DOC staff, and resulted in two general papers on problem-solving (Dollar, 1977; Lenoir, 1977), even though the discussion during the sessions was often unclear, vague, and incomplete, and emphasized DOC more than TA interests, according to Schensul (1977).

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* The question of TA impact is hard to assess. After reading an early draft of this paper, members of each team claimed that their impact had been greater than described, and certainly greater than that of the other TA team.

Case study production. Meanwhile, DOC team researchers and coordinators were proceeding with the preparation of case studies for the 9 sites, and a few cross-site analysis papers (e.g., Hyde, 1977). The process was considerably hampered in several ways: by site researcher inexperience, which affected both data quality and the written product; probably by the amount of time site researchers had taken on linkage work; and by staff turnover.[21] By February of 1977 only six case drafts were ready, and newly-hired research coordinators were extremely critical of their quality, and engaged in extensive and repeated recasting of them. The final draft of the first case was not sent to NIE until January of 1978; four others were completed in May and June of 1978, and the remaining four were scheduled for November. For more detail, see Smith & Gregory (1978).

External review. Beginning in October of 1977, NIE engaged a series of outside reviewers to read major DTA documents produced so far (*not* including the cases), to examine the proposed plans for Phase III which DTA staff was generating during the fall, and to advise NIE on the next steps.

The plan for Phase III. DTA's proposed plan for Phase III, which was to extend for two additional years, was ready in early December. Essentially, the proposed work would focus on two key questions of linkage:

> How can information and knowledge generated from qualitative field research be made useful for urban school practitioners in their efforts to increase problem-solving capacity at local schools? [materials production emphasis]
>
> How can information and knowledge be effectively and efficiently introduced into local urban schools in support of increasing their problem-solving capacity? [strategic emphasis]

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[21] The computerized data storage and retrieval system, after much delay, had become operational during the summer of 1976. Using a variety of access codes, one could pull out "bits" of text, which were sub-units of the Field Data Forms describing particular events at sites (N = 1350 as of fall 1977). However, for reasons that are not entirely clear, its use during case production was limited. Experiments with use of the system for linkage purposes are described below. For a description of the system, see Stern (1977) and Yates (1977).

Specifically, DTA proposed (1) to continue and revise papers currently being developed; (2) to develop TA-supportive materials relevant to capacity improvement (handbooks, research accounts), along with new papers on TA processes, the uses of qualitative data, and linkage models; (3) to develop and field-test new intervention strategies with new user sites; and (4) to write several other products including a study of DTA itself and a manual for field research.

DTA is terminated. But after the NIE staff had duly considered the reviewers' critiques of project papers and the Phase III plans, the project officer wrote a memo in late December of 1977, after three years of DTA work. It concluded:

> The project as a whole for a variety of reasons (not all within the contractor's responsibility) has made only modest progress in its simultaneous pursuit of multiple goals of detailed field study, linkage of that study to assistance for others, design of organizational interventions to test the utility of the field studies, and analysis of the usefulness of the intervention.

The memo, rejecting the proposed plans for Phase III, specified that the concluding phase of the DTA project should take no longer than nine additional months, should not involve further technical assistance, and should essentially be a completion and revision of current writing work (the case studies, various cross-site papers, an account of the data management system, the accounts of technical assistance) and the production of several new papers (a DTA case study, a book on teaching as craft, and others by authors external to DTA, plus a concluding final report by the DTA manager).

DTA management and staff members reacted to the news with a wide range of feelings: anger at hopes denied, bitterness that inappropriate and traditional judgment criteria had been used in the termination decision, relief that an ambitious and stressful project would be winding to a close, and depression as completion of work competed with new duties on other projects. A great deal of energy, time, and money had gone into an unusual and hopeful effort at knowledge-practice linkage. But what might we learn from it?[22]

Barriers and Aids to Linkage in the DTA Context

What were some of the forces that made DTA's linkage efforts difficult or easy? The analysis here is drawn from the issues identified earlier in DTA's general approach to linkage, from the narrative context we have just reviewed, and from retrospective interviews held with key members of DTA. We will be brisk in this summary.

Barriers

Many features of DTA's mission, structure and activities made linkage more difficult. They included:

Mission difficulty. DTA's linkage mandate was unusually difficult and complex (non-routine, complicated, non-tangible items not well embedded in an organized knowledge base had to be transferred by a non-legitimated, poorly-supported linking agent to users who were far from eager for this sort of assistance).

Mission contradictions. In some senses, doing linkage "well" was in conflict with doing research "well"--and even with doing user-oriented technical assistance "well." There was in addition some ambiguity between doing linkage "well," successfully, vs. simply discovering whether or not it could be accomplished with capacity-building-relevant information.

Timetabling problems. The mandate required that valid research data be collected, then used in linkage efforts with new user sites. But the ethnographic,

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[22] Since our discussion is primarily focused on linkage issues, the analysis here and in the remainder of the paper cannot deal with the larger question of explanations for DNA's progress and outcome. Smith & Dwyer (1979) tend to emphasize such matters as the scale of the enterprise; inexperience and newness both in NIE and in DTA; the problems of interorganizational collaboration between CNS and CEPM; spatial dispersion; DTA as a "microcosm" of problems in urban schools; difficulties in managing conflicts over governance, race, concepts and work style; stepwise funding by NIE; managerial overload; ineffective advisory support; and reduced supervision. In the face of such explanatory profusion, one feels ambivalent: more parsimonious views must be possible--but maybe DTA was inherently a multi-problem enterprise from its beginnings.

"grounded theory" approach took a great deal of time to generate useful information, and meanwhile technical assistance efforts began, whether or not the information was available. Some of this was driven by DTA views of what the contract called for, some by the need for entry to sites, and some, probably, by the sheer need to accomplish something.

Staff inexperience. Most site researchers, and more than a few linkers, were not only inexperienced in their crafts, but largely unaware of the literature on knowledge utilization and linkage functions. So the tensions and contradictions in the mission, and the time pressure, presented almost insuperable demands; those demands tended to drive out efforts at training to remedy skill lacks.

Conceptual unclarity. As one staff member said retrospectively about the concept of linkage:

> First you'd think you had it, then woof! it was this big.

And another said, "It never really got beyond words." DTA staff members had great difficulty (both personally and politically) in making clear, concise formulations of linkage and how it might proceed. The unclarity was apparent to them as well as to external reviewers.

DOC-TA separation. For most of DTA's life, two different social systems, researchers and technical assisters, went their separate ways. Linkage responsibilities in Phase I were ambiguously assigned to both or neither;** each group had its own perspectives and worries. Site researchers felt insecure about providing confidential information,* were reluctant to take a user-oriented view, and were

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** In Phase II, linkage responsibility was assigned to the TA regional staff directors. The DTA director noted:

> In fact, for a while I was going to call them Directors of Linkage. /The Chicago TA head/ tried to take this responsibility seriously at least in the beginning, and /the Eugene-Bay City head/ was nice about it, but I don't think he took it seriously.

His characterization suggests anew that "linkage" was somehow seen as something separate from and not quite in the main line of what "TA" was about.

*At least one DTA staffer disputes this view, saying that site researchers "loved to talk" about their sites, and that it was the DOC manager who discouraged DOC-TA TA staff from "bothering" site researchers.

concerned about validity. Technical assisters "knew how it /TA/ should happen" in terms of their own concepts (OD, cultural strengths) and rejected "what didn't fit"; they worried about how to connect practitioners "who don't think research" to information which often seemed distant, invalid, or not credible, and above all knew they had to keep on being "successful" with their clients regardless. In short, the usual barriers and distance between researchers and practitioners were maintained.

Information/site incongruence. Only retrospectively did it become clear that the information available from the 9 sites was much narrower than the range of problems faced by user sites, who often wanted "X" and couldn't get it. Or the information was seriously mismatched. "The 9 site work was not necessarily what the users wanted." The Chicago TA manager, working from a "cultural strengths" model for improving the education of black children, felt most of the sites were working from a "deficit" model.[23] Or, the sites were seen as too different from user sites, "so you had to twist it around, stretch the imagination, almost a creative leap" /to make it fit/. Or, finally, the sites were seen as not being particularly successful in their strategies, with little to offer beyond "what not to do." Sometimes the incongruence was real, and sometimes, a Eugene TA staff member felt, it was perceptual: their clients "had no conception of using outside information," "no idea of transferring information," were not ready to be utilizers.

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[23] The Chicago TA manager's views on linkage difficulties were quite strong. Though she felt that direct linkage between 9-site and user-site practitioners had been useful, she noted in an interview:

> I can't think of any analysis by a site researcher that helped directly in technical assistance.

The problem, she felt, was in part one of incongruence ("Trying to move from the 9 sites to the user sites was stifling,"), and in part qne of transferrability (see below):

> I tended to look at what the TA person in the 9 sites had done. In one of the 9 sites, they recruited non-traditional teachers for the open classroom work. I told the story to /the principal in our user site/. She said it was "a good idea" but didn't act on it....We can't play God. I believed /the information/ but she used something else, worked from her intuition.

The Eugene-Bay City TA manager was more intellectually committed to linkage: a general paper on TA (Eugene-Bay City Consulting Team, 1977) stressed "proactive retrieval" of external knowledge as a key feature of problem-solving capacity. But practically speaking, the use of DTA-generated knowledge in Bay City was minimal in comparison with the use of the TA team's own substantial past experience.

The "transfer" assumption. An implicit assumption behind the RFP, the proposal, and DTA's operations was that 9-site information was analogous to moveable products; the underlying paradigm was that of "technology transfer",* even though knowledge about change processes was the item being transferred. At bottom, the image was of moving something that had worked well in one place to another place. The serious disadvantage of a "technology transfer" model, even in this softened, more sophisticated version, is (as House, 1974, has suggested) that it blinds its adherents to other, equally plausible assumptions (for example, the unlikelihood of goal consensus among users, equivocal problem definition, the ultimate power of the user, and so on.) Further, an implicit "transfer" model can cause linkers to under-attend to the micro-politics of implementation, especially when the issue is capacity-building, rather than the movement of a specific innovation.

Strains from the DTA system. First and last, linkage efforts were embedded in a vastly dispersed temporary organization--DTA--riven by unresolved conflict and with abundant management difficulties. Inter-group squabbles between CNS and CEPM--often driven by "cultural" differences between the two organizations--meant, for example, that the senior people in the DOC group tended to defend their "intellectual turfs," delaying agreement on the coding scheme. Later, DOC-TA differences were deepened by inter-center differences over hiring policy and preferred work styles, and reluctance to "let go" of "one's own past experience." The regionalization, a solution to intergroup struggles, probably weakened linkage efforts. Racial issues, never far from the surface, and conflicts over equalitarian participation of staff hampered work. So did internal conflicts within CNS, which were strong in the latter part of DTA's life. And pressures from NIE on the total DTA system (ex: questioning of the tempo and nature of TA efforts) also affected linkage attempts.

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* A CNS reader offers an alternative interpretation:

> I don't think anyone had illusions about the traditional notions of transferrability. The problem was that they didn't have cogent alternative understanding of KPU (knowledge production and utilization). ..Your analysis may still be good in the sense that without an alternative the vacuum was filled by simple naiveté, at least at times.

Aids

Yet, as in any force field, there were driving forces that made linkage easier. They included:

Centrality of the linkage mission. DTA was in fact built directly around the idea of linkage. The project logo developed in Phase II, showing graphically how documentation and technical assistance were "linked" together, was an affirmation that linkage was "the name of the game", a perception steadily reinforced by NIE concerns in meetings and memoranda.*

** The DTA manager's view, after reading this, is that regionalization strengthened linkage work in Chicago and New York through "proximity of the actors in the activity...since DOC was based at CNS," but may have weakened CEPM's efforts. "Linkage overall was weakened because of the CEPM/CNS problems, and we chose to separate rather than continue our attempts to interact across Centers," he believed.

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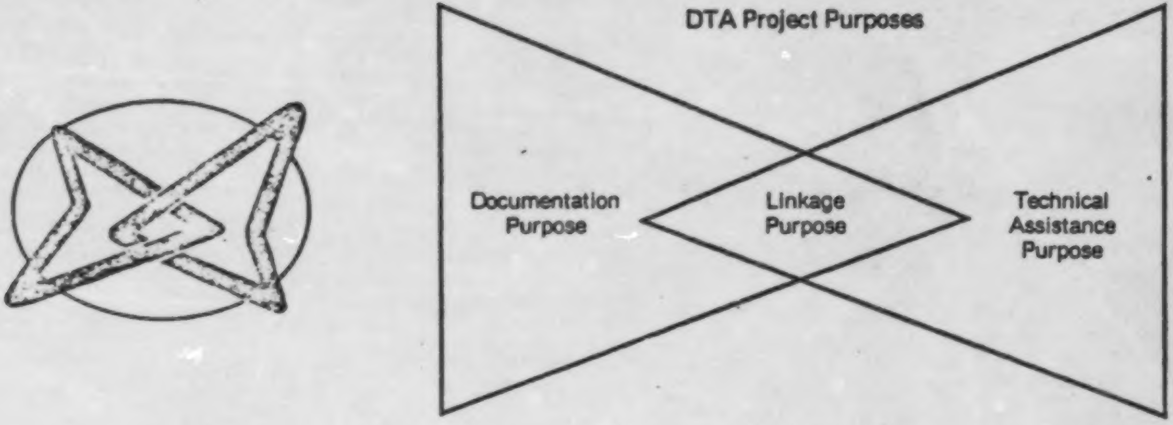
* After reading this, the DTA manager wrote:

> I also strongly emphasized the importance of the linkage mission to the project. Not that this had much effect, but I had a central interest in this purpose. In fact, several times I had written purpose documents much more heavily on linkage than they finally came out. [The Eugene-Bay City TA head] wanted to modify some----he was interested in TA---and [the NIE project officer] others--he was interested in the documentation. It frequently felt to me that linkage was the balancing rhetoric that held two separate activities together in one project. No one really knew how to do it, saw too many limitations in the project to make it work (e.g., the nine sites), but gave it lip service. Functionally it would make sense for me as director to be concerned with the linkage rhetoric that supposedly tied the whole together.

Figure 3

DTA PROJECT LOGO AND EXPLANATORY DIAGRAM

(from 1977 Project Overview)



Commitment. DTA staff members, almost to a person, repeatedly showed dedication, energy, enthusiasm, and a kind of tenacious persistence against high odds that was quite remarkable.

Optimism. Most key DTA leaders were congenitally positive, projecting active visions of an effective future, reinforcing good accomplishments and expecting the best.

Practical experience. The TA side of the enterprise contained people who had considerable prior work either with urban schools, or with capacity-building efforts, who could be expected to speak confidently for user needs during the linkage process. (DTA's problems in cross-center collaboration tended to weaken this benefit, however.)

Cooperativeness. DTA's general ideology stressed collaboration and equal-status participation; the proposal committed the two centers to mutually-supportive effort. Linkage efforts that might have foundered in inter-team or inter-center conflict were sustained.

Informal, personal relationships. Many DTA staff members testified that linkage efforts had repeatedly been supported by one-to-one contacts ("over lunch, or whatever") between DOC and TA members whose personal relationships were strong and positive, and who each had direct first-hand contact in turn with research sites or user sites. Linkage was naturally enhanced in such informal contacts when the partners respected each other and thought the other "knew what s/he was doing."

Structural supports. The creation of the "linkage committee" with the power to design, commission and finance specific linkage efforts was a very considerable aid. The commitment of time percentages and time blocks also had this effect, as did the creation of the new TA-DOC linker role. The new structures did more than simply enable work: in one staff member's words, they provided a sort of detachment:

> There was distance from day-to-day pressures. You could do /linkage/ apart from TA delivery, and apart from research work.

We can perhaps speculate that had such structural moves come earlier in DTA's life, its outcomes might have matched its hopes more fully.

V. Selected DTA Linkage Experiments

In this section, we review 14 different linkage activities carried out during the life of DTA.[24] The aim is to describe them clearly and analyze them, so that researchers and practitioners of linkage can see their actual or potential utility.

The background of each activity is briefly characterized and placed in its DTA context, then described. After its consequences or results are reviewed, there is commentary, offering explanations and/or implications for linkage research and practice.

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[24] The activities chosen were well-defined and documented, and exemplified the full range of linkage experiments tried by DTA. Informal, brief linkage contacts were excluded.

The experiments are sorted into Type 1 (knowledge transformation)[25] activities, focusing centrally on transactions between researchers and technical assisters, and Type 2 (direct knowledge transfer) activities, emphasizing facilitation of contact between the original research sites and users. Type 2 activities are further divided into interpersonal and media-supported ones.

The fourteen experiments are as follows:

Knowledge-Transformation

1. Study of user criteria for case study "usefulness"
2. Critical activity listing
3. Development of cross-site foci
4. Building commonality between researchers and technical assisters
5. Computer-aided retrieval of TA-relevant research information
6. Handbook on knowledge utilization for technical assisters
7. The TA-DOC linker role
8. The Synthesis Conference
9. Linkage seminars
10. Problem-solving repertoire

Direct Knowledge Transfer

Media-supported

11. Photographic displays
12. Slide-tape show

Interpersonal

13. Site researcher aid to user systems
14. Site practitioner aid to user systems

Type 1 Linkage: Knowledge Transformation Experiments

1. Study of User Criteria for Case Study "Usefulness"

Background. Complex knowledge about school improvement is often presented to users in the form of researcher-developed case studies. But little is known about what users need (or even want) in such cases if they are to be a helpful form of knowledge transfer. By the summer of 1977, six drafts of DTA cases were finally available for use in this experiment.

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[25] The predominance of knowledge transformation activities is probably not coincidental, given the range of available data and the need to convert it to user-meaningful information. See Holmes (1977d) for a description of transformation ("translation") processes needed in DTA's linkage work.

Comments. The method could easily be used with products other than case studies. Though developers often stress the importance of differential audience expectations, they often use feedback monolithically to improve the specific product at hand, ignoring the opportunity to understand the possibility that seriously different "frames" may be brought to the reading and use of particular products. The fact that Gregory found that academic reviewers implicitly maintained an academic frame, even when explicitly asked to judge the cases for practitioner usefulness, was very striking.

2. Critical Activity Listing

Background. The DTA proposal spoke of "critical activities," specific bounded events that were essential or crucial for the success of a school improvement process; the activities would be embedded in "lattices" or network-like arrangements over time. In essence, this linkage experiment was aimed at generating a list of "critical activities" in the domain of parent participation, specifying the sorts of technical assistance "products" that could help users utilize such information.

Description. Site researchers, research coordinators, and technical assisters read a common orienting paper on the "critical activity" concept, then individually retrieved examples of such activities that promoted parent participation from their DTA experience. Field Data Forms, researcher memos, and information "in the heads" of staff were the primary sources. Separate lists of critical activities were categorized as follows:

Category	Example
Decision-Making/Governance	Board of Education delegates decision-making power to local neighborhood school boards. Parent groups develop written proposals for project funding.

(cont'd) Category	Example
Technical Assisters/In-School Helping	Parents develop criteria for selecting "parent consultants" to run workshops for other parents.
School-Community Social Activities (fund-raising)	Organizing pot-luck dinners.

Results. The lists may have aided another DTA staff member later on in generating a brief hand-out on parent participation. Time did not permit the production of specifications for materials, however.

Comments. It is not clear that the "critical activities" selected were really "critical" or pivotal, or exactly how staff members assessed this. For the method to be useful, some contextual history (and consequences) of each critical activity would probably need to be specified. The "lattice" concept was originally attractive, was not used here, and could be helpful: the analyst would plot a network of parent-participation activities, a sort of after-the-fact PERT chart, and might be able to see which were key or crucial. The method would require close familiarity with the data base, and rapid methods of retrieving from it, and would probably be expansive of analyst time, though the DTA computer text retrieval system could be helpful (see Activity #5 below).

3. Development of Cross-Site Foci

Background. From the proposal onward, DTA knew it would need a set of organizing "themes" to focus site researchers' attention on key issues in problem-solving activity, and to guide technical assistance to users. The themes would be central in cross-site analysis work (Task 2), and would also aid in materials production.

Description. After site researchers carried out a series of cross-site visits, DTA held regional conferences, asking the researchers to identify themes/foci they had observed which were potentially user-useful, rich, transformable into a product or intervention strategy, were both practical and user-understandable--and which could possibly constitute a "critical activity" aiding problem-solving capacity. Each site researcher did so, and a "start list" of 28 foci, such as

> How do people use political networks to gain support and protection for problem-solving activities in schools?

was generated. Each site researcher then selected 5 to 8 foci and wrote memos detailing the foci, with illustrations from the data base.

At a national DTA meeting (Woodstock) task forces met to clarify the "start list," describing each one in terms of five "facets":

--Actions: what is happening?
--Subsystems: what group or part of the school is involved?
--Context: what is the social, political, historical setting?
--Interim target: what is being aimed at?
--Stage: where does it occur in the process of school improvement?

A typical focus was:

> #3: Increasing sensitivity to students: what methods can helpers use to enable teachers or parents to be sensitive to immediate needs of children and put them in higher priority for immediate action than school rules, schedules, etc.? *
>
> Actions: Effort by TA group to increase this awareness. Find methods for TA group or school to stress (cultural) relationships with kids.
> Subsystems: Teachers, TA group, students.
> Context: Projects are centered on other issues. Mass education: standard rules and procedures.
> Interim target: Teachers explaining to self and students the behavior that gets most rewarded and punished. Teachers recognizing students' special characteristics (responses, adaptations).
> Stage: Open.

At the conference, the list of 28 was boiled down to 15 and prioritized, a process which essentially involved bargaining (and eventually voting); some "watering down" was involved. Site researchers were asked to develop a six-month research plan using 4 to 8 foci and other site-specific "themes," and technical assisters

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* A reader notes:
Clients would not phrase the problem this way, nor agree with much. ..Another example of how schools were not the clients, but the resources to be used to prove preconceived notions....the user sites were treated as resources (from whom one takes) rather than as clients (to whom one gives).

were asked to consider materials and strategies that might address the foci, and to use them in needs assessment with their "user" schools.

Results. One senior researcher called the voting on cross-site foci "a shameful episode" and felt afterward that site researchers were unable to look systematically and directly at the "foci", which were too abstractly formulated. He felt the foci did little to reduce the diverse and unique conceptual frames being used at the 9 sites. But a technical assister from the same center thought some discussions leading to the foci were helpful, and said the one on parent involvement had been useful as she designed a slide show. It seems that the experience of producing the list of foci aided DTA in building the beginnings of a common language across sites, centers, and diverse roles. It may also have laid the groundwork for an effort a year later to retrieve staff members' conclusions on a series of 8 "cross-region synthesis questions," including methods of assistance to classroom teachers, transfer of TA responsibilities to internal change agents, cultural continuity and discontinuity, knowledge utilization itself, the role of the principal, and others.

Comments. DTA's egalitarian ideology hampered the conceptualization and framework building that would have been necessary for experienced senior staff to turn the foci into a coherent guide for inquiry and technical assistance. Phrasing the foci in terms of "facets" was too elaborate, though it aimed at respecting the complex sort of information that needed to travel in DTA linkage channels. The lack of general conceptual clarity about "problem-solving capacity" was very hampering at this point; had it been present, the "foci" would probably have emerged with considerably more ease and fruitfulness, and with more power to guide documentation, linkage, and technical assistance.

4. Building Commonality Between Researchers and Technical Assisters

Background. DTA researchers and technical assisters, as we have noted, were structurally separated, and lived in different worlds, with differing perspectives and differing demands that elicited different behavior. DTA needed to invent ways that would increase cross-role empathy, build working partnerships, and break down the sub-system identifications that made it difficult for DOC and TA staff members to cooperate on their supposedly shared linkage task.

Description. DTA tried three different experiments to deepen role complementarity. First, two technical assisters were asked to read a sample of Field Data Forms, and write a report on their usefulness as a means to improve consultation with user schools.

Second, DOC team members were asked to visit TA sites, and TA members DOC sites, writing reports afterward on how what was seen could enrich their _own_ future research or technical assistance.

Third, DOC researchers were asked to critique existing plans for technical assistance work (and do supplementary site visits and interview TA staff). TA staff members were asked to critique research plans.

Results. (1) DTA Field Data Forms were write-ups of raw field notes concerning an "event," such as a meeting or informal interview, divided into paragraph-like "bits," optionally accompanied by the researcher's interpretive "comments". The TA staff members who read FDFs for a two-day period found that they supplied "nitty-gritty," stimulating information, but were quite critical:

> It is highly unlikely that they will provide _answers_ to specific questions confronting TA members, unless there _is_ a very close match /between the site and the TA site/.

The FDF's were seen as uneven in detail, and as requiring supplementary or contextual information; readers would also need to "take a step back" and think more abstractly, the TA staff felt. This judgment occurred in spite of a long pre-memo by the DOC manager explaining the richness and utility of the FDFs, and how to extract information from them.

(2) The visits seemed to fare somewhat better. The DOC manager who visited a TA site (open corridor teaching) noted many possibilities where DTA research information might be useful in TA work, but also said feelingfully:

> The reality of the situation and the comparative paltriness of what DTA can do is overwhelming. [The teachers'] impulse to improve....[is] at the heart of capacity for problem-solving...[But] how can DTA afford to spend the time that is needed?

He also realized that many other change efforts (often wasteful ones) were happening in the site beside the official DTA work. On both these counts, this researcher became more empathetic to TA issues. When TA staff visited a research site (and met with the local change agents to explain their work and get ideas), the local site researcher called the day a "smashing success," and wrote:

> I question whether you [the TA staff] could have derived such "real" input from one of my FDF's. I know I've learned more about the situation TA faces in Bay City through your visit than from any TA documents...

(3) The researchers' critique of TA plans and operations as observed resulted in several long and thoughtful documents, with many probing questions, and some realizations:

> ...raw data in most cases, is not the most useful information for TA people.
>
> I do not see a plan for obtaining DOC information in any ongoing manner...this is a problem DOC has to face also...both teams' needs and expectations should be clear.
>
> I had assumed the TA people were of like mind...but there are differing opinions...as to what is happening and why.

And a researcher was easily able to note TA situations where information from his own research site could be useful and applicable, and made some suggestions to a "user" about them. He mused:

> I guess that is TA. Perhaps I was doing TA work?

The TA staff members' critiques of research plans also generated some revisions in them, and more cross-role empathy, along with some defensiveness. When a TA critiquer wondered whether some "quantitative" information might be added to the qualitative accounts, the researcher rejoined:

> We had better agree straightforwardly that qualitative and quantitative-minded will accept each others' facts. If /he/ or others want to question my facts...as "subjective," then I will do likewise with their facts on TA work. I believe that this would be unproductive and extremely draining for all of us...

Comments. On balance, though members of each group naturally viewed the cross-role interaction from their own group's perspective, the experiments which involved direct face-to-face interaction--seeing the other role occupant in his or her own working milieu--did seem to accomplish the objective of deepening role complementarity, creating positive attitudes to the ongoing interaction that would naturally be needed to transcend defensiveness and assure effective linkage. Document analysis alone was not enough.

5. Computer-aided Retrieval of TA-Relevant Research Information

Background. DTA's painstakingly-developed computer system for text storage and retrieval had taken so long to come on stream that other approaches to moving information from research sites to technical assisters (like visits, seminars, etc.) seemed more workable. It was unknown whether the system could be genuinely helpful in linkage efforts (as contasted with data analysis work).

Description. A TA staff member, after a thorough briefing on the coding system, was asked to specify several "burning, user site-related" questions to see if computer retrieval could answer them. She outlined three (each took over a page of explanatory text, with suggested codes for content (e.g., "planning," "communication"), actors (technical assisters, principals) and particular research sites where she knew potentially relevant events were occurring. The topics included (1) methods of providing parents with school-related information; (2) methods of assisting users in situational diagnosis and assessment; (3) problems faced by persons entering new jobs.

The DOC team leader, fully conversant with the data system, examined the requests, and wrote a memo summarizing his impressions:

> There are some genuine information needs out there that the data retrieval system might serve.
>
> [But]...the coding system was not in tune with the way TA people framed their needs. Two [of the three requests] will require some creative maneuvers in order to gain access. ...it might require going back to site researchers...

And he suggested:

> TA people should have been involved in development of the coding system from the beginning.
>
> There is a lot more work to be done in inquiry...some creative search may be necessary to find the right access.

Results. This activity occurred at a time of great work pressure in DTA, and the data system had just come on line. To my knowledge the actual searches never took place.

Later, however, the system's feasibility was demonstrated by a senior researcher who requested information on problem-solving episodes to support the writing of an extended paper on the development of problem-solving capacity (Eugene-Bay City Consulting Team, 1977b). He received a total of 94 "bits" on problem diagnosis, and a smaller number on information retrieval and on action-taking. Using the bits as examples, he wrote sections of the paper; the culling and sorting process took many days.

A Eugene-Oakland TA staff member also requested all data bits on "internal helping agent " behavior from one of the research sites where a similar (organization development-oriented) effort was being carried out. He later characterized the 150 pages of print-out as "scratch paper";pieces of raw field notes, he thought, could not supply answers to specific TA questions.*

Comments. The DOC manager's comment that TA staff should have aided in the code development is perhaps most telling. There is a larger question, however: whether the retrieval of "bits" (paragraphs) without specification of context and antecedents can be useful in linkage efforts. The reader can appreciate the problem through a look at Fig. 4, which displays several "bits" drawn from an inquiry made at my request on school-community governance structures, producing about 130 items.

For example, one can infer from Bit 02 that the neighborhood school board is actively dealing with concrete, dollars-and-cents issues. But how did it get that way, and what is its mandate? The meaning of Bit 03 is quite unclear --even if one happens to know that the person referred to is the school's principal. Bit 08 suggests a history of intensive workshops in the district. But for whom, aimed at what? And sometimes the over-all context is so complex that one can only guess at the meaning of a particular paragraph (Bit 18 in Site 08, which is presented without any other bits from the meeting involved.) It seems likely that the computer retrieval method would need supplementation of an interpretive sort, through such items as Comment 01, or the "analytical logs" written by researchers to supply meaning. Otherwise, neither technical assisters nor their user clients could be expected to benefit from such information.[26]

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[26] DTA did produce a number of papers (Hyde, 1977); Wilson, 1977; Runkel et al., 1978; 1979; Schmuck et al., 1979) aimed at supplying integrative meaning to the data from the 9 sites and the TA experience. See also linkage experiments #10, 11 and 12 below, involving materials prepared for users.

* This linkage activity was one of the few which acknowledged that the main useful knowledge in the 9 sites might well be about the activities of the *technical assistance* people there, rather than about what their clients were doing. This resource seems to have been under-used, but it is not clear why. Perhaps TA staff recognized in advance that atomized accounts would be little better than "scratch paper".

Figure 4

EXAMPLES OF COMPUTER-RETRIEVED DATA BITS ON SCHOOL-COMMUNITY GOVERNANCE

```
**************************************************

EVENT    SITE 06   DATE 020376   RECORDER 74060   PAGE 04
         SETTING 2   PLACE 1001   SCHOOLS ASSOCIATED 100

MEETING OF ROOSEVELT NEIGHBORHOOD SCHOOL
BOARD

 E00001  E31071  E60100  E30001  92390
         - - - - - - - - - - - - - - - - - - - - - - -
BIT 02

[redacted] WAS RECOGNIZED AND REPORTED ON THE FIRST ADGENDA ITEMS.
DEVELOPMENTS IN THE COMMUNITY DEVELOPMENT PROGRAM.  SHE SAID
THAT THEY WERE STILL AWAITING THE APPRAISAL OF THE HOUSE NEXT
DOOR BY HUD.  SHE SAID THAT THEY WERE GOING TO PUT PRESSURE ON
THE MAYOR SO THAT THEY WOULD NOT LOOSE THIS HOUSE.  NEXT
[redacted] SAID THAT THE NEW VAN IS STILL IN THE SHOP AND WOULD BE
SO FAR SEVERAL WEEKS BECAUSE A NEW ENGINE HAS TO BE ORDERED.
SHE ALSO SAIC SHE NEEDED SOMEONE TO WRITE THE PHASE II
COMMUNITY DEVELOPMENT PROPOSAL FOR $10,000.  SHE ASKED THOSE
INTERESTED TO CONTACT HER.

 X30061  90810   90410   X00131  90340   90300   90440   90330
         - - - - - - - - - - - - - - - - - - - - - - -
BIT 03

 DURING THE MEETING [redacted] SAT ALONE IN THE REAR OF THE
ROOM.

 X00001  90800   92200
         - - - - - - - - - - - - - - - - - - - - - - -
....
 BIT 08

 [redacted] SAIC THAT ME GROUP WAS TREATED BETTER. BY
 THE MOTEL STAFF. THAN THEY EVER HAD BEEN A ROOSEVELT WORKSHOP.
 SHE ASKED THAT A LETTER OF RECOMMENDATION BE SENT TO THE MOTEL
 STAFF.  [redacted] SAID THAT THE LETTER WAS ALREADY IN THE
 MAIL.

  X30081  90460   91700   90410   91000   X30001
          - - - - - - - - - - - - - - - - - - - - - - -

          **************************************************

 EVENT    SITE 08   DATE 120975   RECORDER 74080   PAGE 01
          SETTING 3   PLACE 1000   SCHOOLS ASSOCIATED 100

 OPEN CORRIDOR SUPPORT COMMITTEE PARENTS
 MEETING

  E31011  E60100  E6C130  E00001  E00101  E00161  E31001  E01001
  E20001
          - - - - - - - - - - - - - - - - - - - - - - -
 BIT 18

  SHE SAID PARENTS (THE PA) ENDED UP BEING MERELY REACTIVE TO
 THE MEASURES PROPOSED BY THE BD. OF ED AND THE UNION INSTEAD
 OF TAKING A STRCNG, INDEPENDENT STAND.  SHE SAID THE "STRATEGY
 COMMITTEE" NEEDED TO DISCUSS WAYS OF DEALING WITH DISTRICT, CITY
 AND UNION POLITICS.  IN THIS WAY THE ROLE OF PARENTS ON THE
 COMMITTEE (OCSC) HAD A "POLITICAL ASPECT".


 COMMENT 01

 THAT TAG* DIRECTOR SHOULD DISCUSS THIS. TESIFIES TO THE
 CONFIDENCE SHE HAS IN PARENTS' ABILITY TO APPRECIATE COMPLEX
 POLITICAL ISSUES.  THE TRADITIONAL EDUCATOR'S VIEW OF PARENTS
 AS HAVING NO REAL PART IN EDUCATIONAL MATERS IS HERE NOT SEEN.
 TAG* HAS A BELIEF IN PARENT POWER TO EFFECT POSITIVE CHANGE IN
 SCHOOLS.
```

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*TAG stands for "technical assistance group", and refers to the local change agent group in the research site.

6. Handbook on Knowledge Utilization for Technical Assisters

Background. DTA needed a systematic approach to TA use of knowledge from the research sites, given the hampering factors of atomized information, coding categories not useful for TA purposes, access difficulties, and the length of case-study syntheses.

Description. In the fall of 1976, a DTA staff member who had served as site researcher, research coordinator, data manager, and "TA-DOC linker" (see Activity #7 below) began developing the outlines of a "knowledge utilization system" to help the Chicago regional TA team. By December, she had produced a preliminary version, which identified knowledge sources (the data, the cases, site documents, the site researcher as informant) and suggested strategies for retrieval and matching to user needs. The report also described in concrete detail series of information-search and linkage activities she had carried out as a TA-DOC linker,[27] which led to activity #13 below.

After feedback, a semi-final version of the handbook (King, 1977) was produced. It provided a general map, including information needs, "information facilitators" (such as site researchers, coders, TA-DOC linkers), information types (ex: "how someone did it," materials) and information sources (adding researchers' "analytical logs," site personnel, photographs, project papers, NIE personnel and documents, and "other literature" to the list above). Specific directions were outlined for reading case studies, using FDFs, making computer inquiries, and getting information from site researchers and NIE project officers. A form was appended for documentation of future information use.

Results. The handbook was not further revised. It appeared toward the close of the 1976-77 school year, the period of major technical assistance work in DTA. Phase III plans did not contemplate revision.

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[27] In retrospect, this section (which disappeared in the final version) was probably quite useful: it showed concretely how linkage worked, and provided explicit models for others to follow.

The DTA manager said afterward:

> It was a nice job, but so what? It lacked any powerful /conceptual/ model, was DTA-specific, /and so was/ not useful once DTA was gone.

Comments. We may speculate that the handbook was useful in providing a general mapping of the domain in which linkage efforts would be taking place, and in suggesting specific access techniques. However, as we have seen, the Chicago TA director was quite skeptical about the usefulness of the 9-site research information, and more committed to direct practitioner-to-practitioner contact (Activity #14). The handbook as such probably did less than its author's other activities as a TA-DOC linker to encourage linkage efforts. Its impact on the Eugene-Bay City TA team was probably minimal; one staffer did not recall ever using it.

7. The TA-DOC Linker Role

Background. As we have noted, the DOC and TA teams were structurally separated throughout the life of the entire project, with seriously hampering effects on linkage. DTA needed a mechanism to bridge the gap between these two sub-systems.

Description. Beginning in the fall of 1976, three former research coordinators entered a new role: TA-DOC linker. Each had had active past experience with the 9-site data, and would now be based in and accountable to one of the regionally-based technical assistance and linkage teams. They would, a memo said:

> have the responsibility for learning about all nine sites through reading case studies and data as well as through other means, such as visits. They are also responsible for using this DOC knowledge in the design of TA.

Holmes (1977b), in his analysis of two of the TA-DOC linkers,[28] said the role would be aimed at

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[28] The New York region TA-DOC linker was ambiguously labelled, since the region was not carrying out TA, but essentially synthesizing DTA knowledge and interacting with TA personnel from the other regions to test its usefulness.

> developing procedures and activities that would make information easily accessible to assistance team members.

An emergent role behavior was:

> /spending/ a major portion of his/her time matching assistance site needs with the information /from the 9 sites/.

The TA-DOC linker in the Eugene/Bay City region carried out a range of activities, including computer retrieval of data on problem-solving methods, reading/analyzing DTA papers and case studies and encouraging TA team discussion of them, and observing/aiding TA activities in Bay City. He was a senior, respected member of the closely-knit Eugene staff and was seen as supportive and helpful; he was less well-connected to the geographically-distant Bay City-based TA staff members.

The TA-DOC linker in the Chicago region, a person with experience as site researcher, coordinator, and data manager, carried out the role through activities like those described above; in addition, she visited six research sites to look at knowledge-transfer possibilities, produced the knowledge utilization handbook (Activity #6), and brokered the use of site personnel to make direct practitioner-practitioner linkage during the TA effort. She also set up meetings between data coders and TA staff, and encouraged direct TA-DOC staff contact. In general, in comparison to the Eugene-Bay City TA-DOC linker, she emphasized face-to-face contact as a linkage channel more, and data/documents less. She too was seen as helpful, in spite of occasional conflict between her and the Chicago TA manager.

Results. On balance, the existence of the role--the first serious structural solution to the DOC-TA separation--probably did support an increase in linkage efforts. The Chicago linker was probably somewhat more successful than the Eugene-Bay City one in offsetting the TA teams' tendency to proceed with "what they already knew" and "meeting the client's needs, where they are," regardless of available 9-site data. The main explanation probably lies in her stronger commitment to face-to-face linkage modes,* and to the new role itself. The Eugene-Bay City linker was more casual; he said retrospectively

> It was another bureaucratic imposition. We agreed I'd be on the lookout for things, if they /TA/ had things they wanted help on...But /the role/ did have meaning. Some things did funnel through.

Comments. As the Study Team manager remarked afterward, the TA-DOC linker role made it "OK to think linkage"--a task that the members of DOC and TA teams alike had only been vainly exhorted to carry out prior to this point. The exhortations spoke less loudly than the fact that members of each team were judged on their ability to do good research, or good TA, but not good linkage. The new role had an occupant with a vested interest in linkage, who could both assist and make demands on the TA group. It was also a crossover role: a former DOC member was now seen as accountable to the TA staff, and could bring his/her own past DOC experience to bear.

8. The Synthesis Conference

Background. As Phase II of the DTA probject approached its end, there was a clear need to reflect on project learnings so far, and pull them together as a basis for next-step planning of Phase III, which would involve added TA work with new sites. The conference would involve all DTA staff and advisors, and as such could be seen as a linkage activity on a level more "macro" than the preceding specific efforts at knowledge transfer.

Description. A good deal of preparation preceded the 3½-day meeting. Four basic "synthesis" topics were identified, covering the nature of "practice" in schools, problem-solving capacity, knowledge utilization, and the facilitation of problem-solving capacity. Authors of DTA papers and the case studies wrote orienting memos suggesting how their work related to the issues. Regional teams had pre-meetings and a seminar on the issues. Memos to paper authors with revision suggestions were encouraged.

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*And, the DTA Manager believes, stronger linkage commitment by the Chicago team in general.

At the meeting itself, four heterogeneous work groups met, composed of persons from all regions and roles in DTA. Each work group dealt in succession with two of the four topics; thus each topic received the attention of two different groups. Each group had a convener, and a recorder, along with an "issue synthesizer" (resource person, and representative of the group in later Phase III planning), and a "proposition writer" charged with helping the group produce and discuss in depth a series of "if-then" statements about the properties of successful problem-solving, knowledge-utilizing (etc.) efforts, based on their experience in DTA so far. The propositions were reported and discussed in general sessions. The synthesis conference closed with brainstorming of possible ideas for Phase III.

Results. I have already alluded to the fact that the products of the synthesis conference were, by and large, not particularly clear or crisp. The propositional format produced more conceptual vagueness than precision. For example:

> If knowledge is transmitted in a way that corresponds to the understanding of the people in the /user/ site, then they will be motivated to use that information.

Other propositions advanced little from DTA's working assumptions:

> If knowledge applicable to educational problems and/or issues is generated and/or transmitted through face-to-face interaction among self-defined peers (i.e., members of the school community and/or TA's and/or researchers) then it will aid school improvement.

And still others bore the hallmark of a participative, "something for everyone" ideology, in which intellectual conflict was resolved through incorporating all ideas, rather than through refining, rejecting, and sharpening processes:

> If schools develop a clear statement of professional role clarification and educational goals, related to expectations for the student's academic development and social welfare, and to which the school adheres as a framework to self-assess, regenerate and develop educational accountability, then ongoing attempts at problem solving will be supported and encouraged.

Participants' reactions at the close of the conference varied. Some comments praised the conference organization, enjoyed the interaction and open, collegial contact, thought the groups had been productive, felt issues had been clarified and "important synthesis realized," and said the conference had been an "educational" opportunity to clarify and summarize DTA's experience. Others (often by the same persons) complained of overload, time pressure, and spotty or superficial products. On balance, however, positive reactions outweighed the negative, even though there was acknowledgment that DTA's basic linkage mission had been imperfectly achieved so far. Phase III suggestions, for example, included:

> We need to do a whole lot more analysis and then very consciously plan TA efforts based on their insights and questions.
>
> Linkage should be the central area of concern.
>
> Linkage should be the focus, both an analysis of the linkage in Phase I and II, and the development of new linkage structures.

Comments. Seen for themselves by an external adviser (myself), the products of the conference were "woolly and unformulated"; the "steps toward mapping out learnings were only halting and partial." Seen by more than a few participants, the results stemming from "productive sessions" were "excellent propositions," "outstanding in quality and quantity." These differences can in part be viewed as reflecting differences in sophistication, standards and expectations, but are in part a function of the "ownership-developing" character of the sessions, which was stronger for the many new staff members. The synthesis conference was probably a good vehicle for assembling learnings gained so far; its weaknesses reflected DTA's weaknesses.

9. Linkage Seminars

Background. The New York region of DTA comprised a research coordinator and four site researchers. Their close and active collaboration (in contrast to the relative isolation of other site researchers) led them to propose a series of seminars to synthesize available DOC knowledge, across all 9 sites, and use it to lay the groundwork for possible new TA work in the New York area. DTA management approved the seminars, but foreclosed the future TA work.

Description. (See Schensul, 1977, for a full account.) Twelve one or two day seminars, on a total of 4 topics generated by the DOC manager (community accountability, teacher professionalization, the school as a well-functioning organization, and the principal as educational leader) were held. They were intended to be a vehicle for consolidating data from the New York sites, to relate it to data from the other 5 sites, and to link it to the needs and issues felt by TA team members (as well as to aid further conceptualization and research). Summary papers on problem solving and its facilitation were expected to emerge.

There were two types of seminars: those for data consolidation, attended by site researchers and coordinators, and those for synthesis, attended by additional roles (TA team members, DTA managers, and teachers, administrators and change agents from the 9 sites). The flow of the three seminars for any given topic usually included specifying "target states" or objectives, developing an analytical framework, presenting case materials, presenting a TA problem in the area, joint DOC-TA work to generate possible solutions, and specific next-step plans for continued TA-DOC exchange. These were sometimes associated with site visits.

Results. The community accountability seminars led to Dollar's (1977) "problem-solving repertoire" (Activity #10 below), to positive DOC-TA interaction (/we could/ "see TA and DOC folks work on actual issues.") and agreements to exchange specific materials and documents across sites and between DOC and TA personnel. The series on teacher professionalization, though some site teachers attending complained of "abstractness" and saw little benefit, did suggest a series of possible strategies for teacher development, and led in part to the drafting of a paper on teachers as professionals. The seminar series on the school as a well-functioning organization had limited effects; DOC members felt that TA staff present had only raised pseudo-problems "for our benefit"...but they have their own ideas about how they're going to handle it anyway." Finally, the series on the principal as educational leader was quite successful in focusing on core issues in a concrete way, not least because a number of principals from research and TA sites were present and taking part enthusiastically.

Across all seminars, Schensul (1977) concluded that the personal contacts aided somewhat in bridging DOC-TA distance and producing shared analyses and subsequent DOC-TA contacts, but that conceptualizations were often broad and vague, partly as a result of member diversity. The sessions tended to be DOC-oriented, with less preparation and clarity about focused TA issues, and spotty TA attendance. Even so, DOC members learned a good deal about the realities of TA. And the New York region manager felt that the seminars were the DTA linkage event that stood out most; she concluded that they worked especially well with clear topics (like parent involvement) with strong interest, need for solutions, and the presence of "hard data". The general DTA manager thought the seminars "had come closer /than most activities/ to using DTA fully"; the DOC manager was unsure whether they had promoted subsequent linkage work.

The paper on facilitation of problem-solving capacity (Lenoir, 1977) produced after the seminars was, however, not satisfactory to its author ("the seminars were organized topically, and the paper was on a different wavelength;

I couldn't bridge the gap.") or to the external reviewers.

Comments. Like many interventions in social systems, the seminars suffered from the very problem (TA-DOC separation) they were designed to solve. However, the method seems useful, particularly if accompanied by site visits and/or the presence of site personnel.

10. Problem-Solving Repertoire

Background. The planning for the New York seminars had included the idea that one of their products might be a sort of compendium of strategies useful for improving problem-solving capacity in user sites.

Description. A consultant was asked to take part in the seminar series on community accountability, and subsequently to explore the feasibility of developing a "repertoire" of methods for increasing community accessibility to schools for improvement purposes. He did so, producing an extended paper (Dollar, 1977). First, it outlines the knowledge-transfer problems faced by DTA over its life so far, including uneven data collection quality across sites and across time, uncertain audiences for linkage efforts, unclear appropriateness of data, and uncertainty about how much and what kind of data "transformation" would be optimal for users. Second, the paper defines the "problem-solving repertoire" (PSR) as

> a means of indicating to interested parties the nature and scope of the knowledge gathered at the sites and therefore available on an as-needed basis.

In effect, the PSR would be a sort of super-index.

> Potential TA recipients could use the PSR to determine whether there is a match with their needs. TA agents...could use it to identify areas of knowledge for which they have a use. Once this has been done, a specific request could be made to be furnished with more information on the subject...

Third, the paper explains that PSR would need to reference data from a variety of sources: the FDFs, papers, case studies, and "fugitive" knowledge, still in people's heads."

The paper then outlines a series of categories that might underlie a PSR on community accessibility, including context of program, underlying assumptions, level of parent participation, leadership, support, teacher role, parent involvement strategies, and critical factors or events. Finally, the general outline is illustrated with data from 3 DTA sites.

Results. The PSR "mockup" was produced toward the end of the year when technical assistance was being carried on most vigorously. It is unknown whether it directly influenced further thinking about technical assistance.

Comments. The PSR paper is one of the more thoroughgoing and coherent efforts to provide meaningful access to DTA data in a form usable by technical assisters or site people./ Though its actual usefulness is moot, it respects the complexity of the strategies being "transferred" along with acknowledgment of the linkage difficulties involved. Linkers interested in transferring the sort of knowledge DTA was struggling with are well advised to examine the Dollar paper, and test its feasibility in their settings.

Type 2 Linkage: Direct Knowledge Transfer (Media-Supported)

We now turn to four additional linkage experiments which involve direct efforts to link people and events in *research* sites to people and events in *user* sites.[29] The first two of these involve the production of media to carry the message; the latter two used people as carriers.

11. Photographic Displays

Background. From the beginning of DTA research, site researchers had been trained to do photo documentation along with their on-paper note-taking when they visited sites. DTA staff reasoned that, if part of the problem in linkage was that users felt knowledge from research sites was too abstract, too distant, too unconnected with their own concerns, photographic displays would add reality and plausibility to the other information being conveyed.*

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[29] Note that some of the linkage seminars (Activity #9) did this as well.

Description. Four DTA researchers read material on photo documentation in sociological research (Becker, 1975), and took pictures in sites around the themes of "sensitivity to students" and "awareness of cultural discontinuities." The pictures were assembled by a media specialist into a "photo gallery" format, on large sheets of paperboard. The photo gallery was used during early entry and awareness activities with several TA sites.

Results. The site researchers, with some training and practice, were able to use their understanding of the site to produce interesting, good-quality pictures. Thematic focus, and attention to close-ups of individuals and dyads, helped. But, as the DOC manager reflected, the photos actually told little about the actual "strategies" being pursued in the research sites. He wondered:

> To what extent is the content of verbal messages the heart of human activity? How do photos add anything to knowledge of the words?

And he thought the essay was hampered because there was no real "market" in mind during its development. The Study Team manager thought he could see evidence that the photo gallery (which had explanatory text associated with the photos) had "set a context for TA work," but did not give detail. The photo gallery technique was used several times in subsequent TA work.

Comments. We might speculate that the photo essay, though its direct informational content was minimal, may have served to increase technical assisters' credibility and "entitlement" through its implication that DTA was closely involved with and understood the needs of students and teachers in other urban schools. One TA staff member thought they also provided users with encouragement and energy ("Others made it, so we can too.")

Probably more information-rich media (see below on slide-tape show) would be needed if actually-usable information were to be transferred directly to "users".[30]

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* The DTA manager comments:

> There also was a feeling that written words were the tools of the traditionalists, and that photography would have more power. This goes back to the "grand bias" of p. 19 /recasting science in practice-based terms/.

12. Slide-Tape Show

Background. Given the existence of DTA site researchers' photo documentation, and the complex nature of the information about "problem-solving capacity" to be communicated to users, slide-tape shows were a natural medium.

Description. TA staff, working from slides taken at TA and research sites, and from discussions with two researchers from sites with active parent involvement programs, prepared a slide-tape show aimed at teaching the difference between parent involvement strategies that were mainly "social" (dinners, fund-raising, etc.), instructional (parent aides, etc.) and participative in school governance (parent councils, etc.). The slide show was critiqued by the researchers, then verified and used in several TA interventions in Bay City.

Results. The Chicago TA staff felt their slides had been used inappropriately; one felt the show was "simplistic". But they had done slide shows before, and discussed them during early planning. They requested production of (and used) a slide-tape on open-corridor teaching for use in TA work. Eugene-Bay City TA staff considered the show a good launcher for discussions of possible parent involvement strategies, partly because of its "home-made", non-slick character; the Study Team manager thought that it usefully summarized a good deal of information "without flooding the user." Slide-tape shows (including one on DTA itself) were repeatedly used in TA efforts.

Comments. This linkage method is not particularly novel; it is included here only to suggest its usefulness when a credible means is sought for transfer of complex information. The presence of a clear underlying framework is probably essential.

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[30] DTA staff also experimented with simultaneous documentation of a role-played school scene, using note-taking, color and black and white still photography, audiotape, and videotape. The comparisons across methods were quite rich (e.g., black and white photography seemed more "intensive, serious" than color; note-taking missed a great deal but was more coherent). Later, videotapes of site events were used several times to communicate the flavor of research site events to users.

Type 2 Linkage: Direct Knowledge Transfer (Interpersonal)

13. Site Researcher Aid to User Systems

Background. DTA staff members' frustration with the delay and difficulty involved in transforming "data" into meaningful assistance to users, plus their commitment to face-to-face assistance, led naturally to the idea that site researchers themselves might be the best information carriers to users. They understood their sites well, had a great deal of diverse information easily retrievable from their "soft computers" (that is to say, brains) and might be credible to users because of their familiarity with schools.

Description. During May of 1976, while the Chicago TA team was working with a set of 4 teachers who were experimenting with "open corridor" methods of teaching, the site researcher who had studied an open corridor school at a research site was asked to come for a seminar with the teachers, and a larger group of potentially interested teachers. Prior to the seminar, she visited the user site, and talked with principal and teachers. Later she was sent a list of interviewer-derived issues and questions raised by the 4 teachers and their principal. A media specialist was also asked to prepare a photo gallery and a slide tape based on the research site.

At the seminar itself, which lasted a bit over two hours, the photo gallery and resource materials including pupil products from the site, articles, and an account by the site researcher were displayed. The four "user" teachers enthusiastically described their work with open corridor methods in a panel discussion, and the site researcher gave a talk on the general philosophy and approach of open corridor work at the site she had studied. The teachers in the audience raised a wide variety of questions, mostly very specific ones on matters of classroom management and discipline, report cards, bureaucratic rules, and relationships with administrators.

Results. The TA staff felt the seminar had served to provide general background information about open corridor work and philosophy, to support the user teachers already doing such work, and to provide information to other potential users in the site. But they criticized the site researcher's presentation as "dominating" and as "highly intellectual" and said it had not met specifically-stated needs of users. For her part, the site researcher complained of poor coordination during the planning, saying that the interview data had not helped her know what the total audience wanted--and that a general overview of the philosophy was the most appropriate approach anyway for the brief time allotted, since she "had to be true to the /research/ data," rather than only to the exigencies of TA work.

In spite of these divergent views, the seminar probably added credibility to the TA team's work. Teacher response was excited and favorable ("they felt what they were doing was OK, even though they hadn't really started using open corridor much," the Study Team manager noted). The principal asked the site researcher to return for more meetings in the fall.

That did not happen, but TA staff did visit the researcher's site, and arranged a later session with users, where a parent and a teacher adviser came to help with specific issues (see Activity #14, part 3).

This seminar, in general, was frequently mentioned by DTA staff during interviews as a positive linkage experience.

Comments. The planning difficulties, and mismatch of expectations about what the site researcher should be doing in the seminar were, of course, generated by the TA-DOC separation. The fact that the seminar could be a successful as it was suggests the idea that the ambitious, complex linkage tasks DTA had been attempting were achievable by relatively straightforward means. It is of interest that information transfer used a wide variety of modes (lecturing, questions/answers, photo gallery, slide tape, reports and documents, child products, articles), and that direct transfer of "data"--that is to say, specific descriptions--was minimal. If anything, generalizations were the primary mode of discourse, with teachers wanting more prescriptions than they got. The device of preceding the site researcher's talk with reports from users may have helped her tailor her remarks somewhat to the user audience.

14. Site practitioner aid to user systems

Background. DTA had always been committed to face-to-face information transfer, and to some extent to the idea that this proceeded best between people who perceived themselves as peers.[31] The DOC-TA difficulties may also have led to what amounted to a "bypass" strategy: why not bring practitioners from study sites directly to user sites, and let them transfer knowledge, without the mediation of DTA research or technical assistance staff, who would only need to serve as catalysts?

Description. DTA carried out several linkage activities of this sort.

(1) An experienced parent consultant from a research site played a central part in a seminar on parent involvement for parents, teachers, and administrators at a Chicago TA site.

Prior to the seminar, the Chicago TA-DOC linker (who originally proposed the activity and had been a research coordinator for the site) visited the California site for planning with the parent consultant, Gertrude Bass.* She also located an available videotape of a role-playing scene including Mrs. Bass.

The TA staff also prepared a general brochure describing Mrs. Bass's background and years of experience as a school volunteer and in-service consultant.

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[31] The Chicago TA manager in a summary paper (Holliday, 1977b) gave this strategy top priority, explaining her views largely on the basis of "urban school communities' negative views of the usefulness of educational research," and citing past exploitation by researchers, research abstractness, and researcher distance from the classroom ("They haven't had the 35 from 9 to 3.").

* Pseudonym.

At the seminar itself, which lasted for two hours, a slide-tape show describing DTA in general was shown. The TA-DOC linker described the work on parent involvement at the research site, and played the videotape showing Mrs. Bass role-playing a parent trying to get her child's records from a principal. Mrs. Bass then spoke directly and movingly of the problems of and barriers to parent access to schools in her district, of workable tactics, and of parent rights and responsibilities--all within a perspective stressing the black experience in America and the idea that "children are our future." She responded to questions, and showed copies of a handbook on legal rights of parents. At the close, she received enthusiastic testimonials from the local parent chairpersons and the principal, and a "standing ovation" from the audience.

(2) In a similar activity, Joyce Taylor,* an experienced teacher in an open corridor program at a research site, met in two half-day sessions with small groups of teachers at the Chicago TA site who were launching open-corridor work, describing the problems and difficulties she had had in initiating open-corridor teaching. Prior to the sessions, she received the written questions and concerns of the user teachers.

Her presentations at the meetings, which included a slide-tape show on her school's work, were "articulate and open", and teachers raised specific questions. She supplied answers not only on the process of developing open-corridor work, but its products, including curriculum and learning stations.

(3) A parent activist and a teacher adviser from the research site discussed in Activity #13 came to the Chicago TA site and held two 90-minute seminars with

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* Pseudonym.

parents and teachers.[32]

Results. As with Activity #13, this sort of activity was frequently mentioned by DTA staff as being worthwhile. (1) A TA observer felt that Mrs. Bass had "completely enthralled" the audience, and the Chicago TA manager said she had "inspired" them as well as the DTA staff; the TA-DOC linker was "genuinely excited" by the event, which had been effectively planned and executed, she felt. Parent reactions were very positive. A parent quote from the TA team's report was:

> The speech was just so full of information, until I just want to shout it out, talk to my parents and neighbors, and also to the community. It was so full of truth. I've got a story to tell, now. I cannot find words to express my thoughts of the speaker. It was bread for the soul!

Parent reactions also stressed relevance and usefulness of the ideas presented, even though (or perhaps because) Mrs. Bass used phrases like "maybe this doesn't fit with your situation, but we did it this way..." Pictures from the event were assembled into a photo gallery, which was mounted in the school's corridor and may have served to reinforce interest in the topic of parent involvement. The TA-DOC linker said the event had had very useful "back effects" on DTA's credibility and access in the research site from which Mrs. Bass had come. The Chicago TA manager thought it had raised parents' awareness, and "sharpened teachers' sensitivities" as well.

(2) While Ms. Taylor felt some initial difficulty in "knowing where the teachers were," the teachers' final evaluations of the seminar were quite positive, not only for the style ("review of a live program by a person involved in the practical as well as the theoretical aspect...for once we had a chance to discuss our situation with someone who has been successful in a similar situation"), but its content ("the fact that open education involves a basic curriculum with options...being told that the program must be flexible and that teaming is

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[32] One additional example: the Eugene-Bay City TA team, who had been committed from the beginning to the idea of practitioner--practitioner contacts, had hoped to get Mrs. Bass to come to Bay City. The effort failed in the midst of DOC-TA coordination problems. So the Eugene-Bay City TA team involved a parent from a non-DTA site (ironically, in Chicago) to speak with users at two one-day conferences on parent-teacher interaction, with reasonable success. This effort preceded the Bass visit to Chicago.

important to make the program work.") The Study Team manager felt Ms. Taylor was well-prepared, and in fact had done a good job of locating the teachers' questions "in a low-key way." He felt she was helpful to the teachers "in seeing where they were, what they had." The comparability and relevance of Ms. Taylor's experience was clear.

(3) The visit from the parent and teacher-advisor was quite successful, according to the Chicago TA manager: ("You can still hear them talking about it.") and seems to have resulted in the creation of a "sister school" set-up between the research and user sites (of unknown duration).

Comments. Direct contact between research and user sites seems to have worked well mainly because of (1) careful preparation of users and the visitors to focus the interaction; (2) direct, articulate presentations by visitors seen as having competence and experience; (3) the development of the belief that the research and user sites were comparable in important respects; (4) the inclusion of descriptions of specific tactics, techniques, etc. embedded in a general but clearly described philosophical framework; (5) the brokering and introductory function played by research and technical assistance staff.

There is an interesting issue here: the problem of knowledge transformation. DTA worked hard to synthesize, translate, make knowledge from the 9 sites available in usable form for technical assistance. In many cases this proved inherently difficult (not only because of DOC-TA separation). But it seemed here that the practitioner-visitors had already done a sort of pre-transformation: they had abstracted their own experience in a way that left it still useful and relevant for users. Of course, the question remains: was the knowledge they transferred "valid," back of the support and "inspiration" they seem to have created in users?[33] And can craft-using practitioners be aided only by bearers of craft? We do not know.

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[33] The validity question is not trivial: Rogers (1962) noted examples of useless (or even pernicious) innovations which diffused from farmer to farmer.

VI. *Conclusions and Puzzles*

What does reflection suggest about these specific linkage activities, and about the DTA experience in general as it bore on linkage? Can clear conclusions be drawn? And what remains uncertain or problematic? I will not try to be complete or exhaustive, but stimulative.

The Linkage Activities

Conclusions

"Linkage in a new key" is achievable. These experiments suggest that transferring the sort of complex information DTA was focusing on[34] can be done, though it is quite difficult, and the details of "how" are still far from specifically clear.

Knowledge transformation is necessary. "Raw" knowledge about matters as complex as the development of problem-solving capacity is almost useless. Much synthesis, packaging and preparation is required, since the information is (a) complex; (b) contextually-sited; (c) embedded in a chronological flow of events.

Knowledge transformation is demanding. Adequate knowledge transformation seems to take many things: a good deal of time and energy; a large amount of direct experience with the basic phenomena the knowledge is "about," and with the settings it is generated from; and conceptual and intellectual skills of an above-average order. It is a serious mistake to expect good knowledge transformation to emerge from group discussion, though group work can supply a base for a competent individual transformer's work.

Researchers, technical assisters, and practitioners live in different worlds. The general "frames" brought to knowledge transfer by occupants of these three roles really do differ quite substantially, and linkage efforts that do not respect (and exploit) the differences are quite likely to fail.

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[34] We should note that DTA never established very clearly whether the information they had transferred did in fact have a "capacity-building" character.

Puzzles

What makes for good knowledge utilization? We do not know from these accounts with any certainty how users incorporated the knowledge they were getting in their day-to-day work--nor what DTA staff members did to facilitate this. The DTA Study Team manager pointed out that most of the linkage effort had gone into either "pre-adapting" (knowledge-transforming) activities on the part of DOC and TA staff, or on "user-preparing" activities (getting TA clients in shape to pay attention to incoming information). Very little went into aiding the direct use of the knowledge in the user system. This "front-end" emphasis parallels the prior history of linkage efforts that have involved more-specific educational products and innovations; only in the last few years has extensive attention been paid to issues of implementation, incorporation, and institutionalization. As might be expected, given its more-complex task, DTA too learned less about "back-end" linkage problems.

Are research and technical assistance activities inherently in opposition? DTA linkage activities were designed with the assumption that research could inform technical assistance (and that technical assistance could have back effects on research). But there is a sense in which the demands of "helping" may be essentially incompatible with the demands of "understanding": being "true to the data" may make it impossible to be "true to the client," and vice versa.

Is craft knowledge, after all, the only linkable information? When it comes to capacity-developing knowledge, it may well be that "research" or science-based information is, by and large, unhelpful. The DTA linkage experience suggests either that (a) the research-derived knowledge must be "packaged" in craft-like form, so that users see rather clearly what to do, how to do it, and when; or (b) the knowledge is synthesized intuitively, and presented directly as craft (or "lore") from one practitioner to another. The possible "validity" problems of alternative (b) could in part be aided, of course, if practitioners are the ones involved in the packaging operations of alternative (a). But we are left with the deeper question of the importance (or unimportance) of generalizations, theories, explanations as forms of transferrable knowledge, when the improvement of problem-solving capacity is at stake.

The DTA Experience and Linkage

Conclusions

Turning to the DTA experience more generally, what can we note about its linkage-relevant aspects?

Linkage as posed by DTA is enormously difficult. DTA assumptions and procedures specified an approach to linkage that was almost unaccomplishable by humans: (1) the knowledge to be transferred was proccessual, unpackaged, non-validated, intangible, complex, and nearly unique; (2) the users were complex organizations whose members had not actively sought the information being moved; (3) the linkers were aiming toward diffuse outcomes, were inexperienced, and poorly supported; (4) linker-user transfactions, though not well legitimated, were expected to be non-routinized, pro-active and intense. The fact that even modest linkage successes appeared is striking.

Contradictions in the mandate made for increased difficulty. DTA was expected (and/or believed it was expected) to do good research, and good technical assistance; to "succeed" in knowledge transfer and to see whether it could be done; to do linkage and to study itself doing linkage; to improve practice, and to improve knowledge about improving practice; to improve school research methods and use the results of that research; to find and transfer good problem-solving practice and to be responsive to clients' needs, whatever they might be. Some of these demands are in principle congruent with each other and some are not. But even those that are congruent were so demanding of time that limited resources usually had to go to one of the demands at the expense of the other.

The knowledge pool was limited. The NIE project officer said after DTA's termination,

> What is meant by the phrase "limited information pool"? Compared to what? Client needs, maybe. But it would be hard to argue that the nine sites weren't pretty rich in experience, apart from the problems of capturing it and helping someone else get inside it.

The point, however, is that knowledge in the DTA project had to be defined in relation to client needs, had to be capturable, and brokerable to users. Thus the effective size of the pool turned out to be quite limited, even though there were 1,750 Field Data Forms, many researcher logs and memos, and a large amount of unformulated "experience" to draw on. When the needs of users bumped up against what was "available," and linkers confronted the fact that site researchers thought the change agents they were observing were far from successful, the net effective size of the "pool" (itself largely unorganized) was quite small.

Dispersed sub-systems were a major barrier. The collaborative effort between CNS and CEPM, the steady structural separation between researchers and technical assisters, and the failure to create durable linkage subsystems generated all the usual intergroup difficulties present in most organizations: maintenance of own virtuous perspectives, xenophobia and downgrading of other groups, and persistent overload conflict and confusion. (See Arends & Bayliss (1978) for further reflections on this topic.) These dynamics were exacerbated by tremendous geographical dispersion, which heightened paranoia and made ameliorative efforts so costly that they were infrequent and feeble.

Good will, commitment, collaboration and energy are not enough. The DTA managers and their staff were not bad-mouthed, lackadaisical or reluctant to work with each other. But the scale and complexity of their linkage mission and its inherent contradictions were only partially appreciated by the writer of the RFP, and by those who drafted the proposal. And the very collaborative ideology guiding DTA's leaders as they designed, staffed and managed the effort brought it many people whose skills were unequal to the demanding (and often poorly-defined) tasks they faced.

Puzzles

What does transferrable "problem-solving" knowledge look like? The original concept of "critical activities" embedded in "lattices" was attractive. So were the "cross-site foci"; so were (for example) the lists of practical suggestions for parent involvement. But it remained quite unclear what good (usable) knowledge would consist of, concretely. How should it be formatted? Should it be embedded in a larger pool of similar items and, if so, how? Should it be more "tangible," and should it be embodied in a usable "program," like the programs in the National Diffusion Network?

How large should linkage loom in capacity-building efforts? Perhaps expanding problem-solving capacity requires only a limited amount of external knowledge input: technical assisters are simply iterating a learned set of system-building processes and activities with little reference to what other sites have done. (That is the implication of much that the Eugene-Bay City TA team did). Or perhaps user systems should be strongly urged toward knowledge utilization, both because knowledge utilization is itself a learnable sub-capacity of problem solving, and because the new substantive ideas gained will enrich them. We do not have a good picture of all this.

Is complex knowledge transfer discontinuous from program-specific transfer? DTA seemed to be assuming that linkage methods like those employed in the National Diffusion Network were somehow inapplicable, not useful because they were devoted to "packages,""specific innovations". It may be that "capacity improvement" linkage is enough more complicated and difficult that the awareness conferences, user training workshops, and user implementation trouble-shooting methods used in the NDN are not applicable. But that has not been shown . Furthermore, most observers would say that more than a few of the programs in Educational programs that work, the basic JDRP/NDN sourcebook, are indeed capacity-building ones. In any case, the question remains open.

Could DTA be usefully redesigned to make linkage more possible? In the abstract, the answer is of course a resounding yes: the scale could have been more limited, the mandates less contradictory, the time line more achievable, the contractor single (or totalling 9, one for each site), linkage systems specified from the start, and so on. But in the concrete, in the real time occupied during the design, start-up and operation of DTA, the answers were far less clear, and the ill effects of basic design flaws invisible or at best clouded. So the design of a better DTA, one that would bring us clearer answers about how "linkage in a new key" works at its best, remains a problematic task, one that I commend to researchers and practitioners of linkage alike.

For a start, we have the suggestion of a DTA senior staff member:

> I think DTA could be done. I think it could be done with a crew of about six people over about ten years. Or something smaller (in numbers of questions to be answered) could be done with fewer people and less time. But if one of the questions is how you get practice from one place to another, and you want to document some episodes, then you can't reduce the time by very much, because the process is a long one, and there is much more chaff than wheat. A local group can solve its own local problem in a year or so. But the process of the news getting around until it finds a "match" some place is a long one.

One should be clear; matters that take a long time are not necessarily more difficult (or even more complex). The critical question for us, as for DTA, remains: how does it work, and why? Once that is understood, comprehensive change in schools might happen more easily.

REFERENCES

Arends, J.H., and Bayliss, C.H. Organizing for improvement in education: establishing effective organizational intersections. DTA paper, September 1978.

Becker, H. Photography and sociology. Afterimage, June 1975, 22-32.

Belmont Conference Report: Dissemination and the improvement of practice: cooperation and support in the school improvement process. San Francisco, CA: Far West Laboratory for Educational Research and Development, Educational Dissemination Studies Program , 1980.

Bennis, W.G., Benne, K.D., and Chin, R. (Eds) The planning of change. (2d ed.) New York: Holt, Rinehart and Winston, 1969.

Berman, P. Toward an implementation paradigm of educational change. Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Brickley,R.R. The case for external linkage: experience from a proven model for information delivery. Paper read at American Educational Research Association meeting, 1979.

Butler, M., and Paisley, W. Factors determining roles and functions of educational linking agents, with implications for training and support systems. San Francisco: Far West Laboratory for Educational Research and Development, 1978.

Center for New Schools, A multi-method study of the development and effects of an alternative high school learning environment. (4 vols). Chicago: Center for New Schools, 1975. Final Report, NIE Project No. 3-2664, NIMH Grant 1-RO1 MH22248-01.

Cohen, D.K., and Phillips, D.A. Social science, craft, and educational practice. Cambridge, MA: Huron Institute. Draft manuscript, 1978.

Daft, R.L. and Becker, S.W. The innovative organization: innovation adoption in school organizations. New York: Elsevier, 1978.

Dollar, B. Toward a problem solving repertoire for community accessibility to schools. Chicago: Center for New Schools, May 1977.

Emrick, J.A., and Peterson, S.M. A synthesis of findings across five recent studies of educational dissemination and change. (Educational Knowledge Dissemination and Utilization Occasional Paper Series). San Francisco, CA: Far West Lab for Educational Research and Development, 1978.

Emrick, J.A., with S.M. Peterson and R. Agarwala-Rogers. Evaluation of the the National Diffusion Network (2 vols). Menlo Park, CA: Stanford Research Institute, 1977.

Eugene-Bay City Consulting Team. *Some processes and effects of consultation in urban schools*. Center for Educational Policy and Management, University of Oregon, 1977. (a)

Eugene-Bay City Consulting Team. *Toward a theory of facilitating organizational problem solving in urban schools*. Eugene, Oregon: CEPM, University of Oregon, 1977 (b)

Francisco, R.P. The Documentation and Technical Assistance project in urban schools. *Theory into Practice* 18(2): 89-96, 1979.

Fullan, M. The role of human agents internal to school districts in knowledge utilization. Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Fullan, M. and Pomfret, A. Research on curriculum and instruction implementation. *Review of Educational Research* 47(2)335-397: 1977.

Glaser, B., and Strauss, A. *The discovery of grounded theory*. Chicago: Aldine, 1967.

Gregory, L. A discussion of practitioner and academic reviewers' approaches to usefulness of case study products. DTA draft, October 1977.

Harris, S.L., Eiseman, J.W., Harris, R.C., Doyle, J.A., and Crandall, D.P. *Preparing for dissemination: a study of technical assistance for developer-demonstrator projects in the NDN.* Andover, MA: The Network, 1979.

Havelock, R.G. et al. *Planning for innovation through dissemination and utilization of knowledge*. Ann Arbor, Michigan: Center for Research on Utilization of Scientific Knowledge, 1971.

Holliday, F.B. *Building on cultural strengths: the experience of the Chicago Region of DTA in building capacity in educational problem-solving in local urban schools*. Chicago: Center for New Schools, 1977.

Holliday, F.B. Strategies to facilitate knowledge utilization in urban public schools. Paper read to American Educational Research Association meetings, April 1977 (b).

Holliday, F.B., and Salley, C. A look at technical assistance strategies in an urban school district. Chicago: Center for New Schools, 1979.

Holmes, M.L. An examination of two technical assistance styles within one project. DTA draft, 1977(a)

Holmes, M.L. TA-DOC Linker role. DTA draft, October, 1977(b)

Holmes, M.L. Use of documentary information and face-to-face interaction in working toward school improvement. DTA draft, August 1977(c)

Holmes, M. The linkage between research and practice: the case of the DTA project. Paper read to American Educational Research Association meetings, April 1977 (d).

Hood, P.D. *Indicators of educational knowledge production, dissemination and utilization: a conceptual framework*. San Francisco: Far West Laboratory for Educational Research and Development, Educational Dissemination Systems Support Program, 1979.

Hood, P.D., and Blackwell, L.R. *Study of innovation requirements in education: Vol. I, Key educational information users and their styles of information use*. Santa Monica, CA: System Development Corporation, 1976.

Hood, P.D., and Cates, C.S. *Alternative approaches to analyzing educational dissemination and linkage roles and functions*. San Francisco, CA: Far West Laboratory for Educational Research and Development, 1978.

House, E.R. Transferrability and equity in innovation policy. Mimeographed, 1975. The author: University of Illinois, Urbana.

House, E. Three perspectives on innovation: the technological, the political, and the cultural. Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Human Interaction Research Institute *Putting knowledge to use: a distillation of the literature regarding knowledge transfer and change*. Los Angeles, CA: the Institute, 1976.

Hyde, A. *Capacities for solving problems: problems and problem solving methods of school principals*. Chicago: Center for New Schools, 1977.

King, Y. *Towards a handbook for technical assisters on information utilization*. Chicago: Center for New Schools, May 1977.

Lenoir, T.C. Toward a theory of the facilitation of a sustained capacity for problem solving in urban schools. DTA draft, August 1977.

Lillie, D.L. and Black, T.L. TADS--a systematic support system. In M. Reynolds (Ed.) *National technical assistance systems in special education*. Minneapolis, MN: Leadership Training Institute for Special Education, University of Minnesota, 1975.

Louis, K.S. Dissemination of information from centralized bureaucracies to local schools: the role of the linking agent. *Human Relations*, 30(1):25-42, 1977.

Louis, K.S. The role of external agents in knowledge utilization, problem solving and implementation of new programs in local school contexts. Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Miles, M.B. Common properties of schools in context: the backdrop for knowledge utilization and "school improvement." Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Miles, M.B., and Lake, D.G. Self-renewal in school systems: a strategy for planned change. In G. Watson (Ed.) Concepts for social change. Washington: National Training Laboratories, 1967.

Moore, D.R., Schepers, E.M., Holmes, M.L. and Blair, K.A. Assistance strategies for six groups that facilitate education change at the school community level. Chicago: Center for New Schools, 1977.

Nash, N., and Culbertson, J.A. Linking processes in educational improvement: concepts and applications. Columbus, OH: University Council for Educational Administration, 1977.

Olson, E.E. Experiments to improve information transfer and the effectiveness of R&D in industry. Paper read to American Association for Advancement of Science meetings, 1979. The author: College Park, University of Maryland.

Pincus, J. Incentives for innovation in the public schools. Review of Educational Research, 44(1):113-144, 1974.

Rogers, E.M. Diffusion of innovations. New York: Free Press, 1962.

Runkel, P.J., Schmuck, R.A., Arends, J.H., and Francisco, R.P. Transforming problems in urban schools into a capacity for solving problems. Eugene, Oregon: CEPM, University of Oregon, September 1978.

Runkel, P.J., Schmuck, R.A., Arends, J.H., and Francisco, R.P. Transforming the school's capacity for problem solving. Eugene, Oregon: CEPM, University of Oregon, 1979.

Runkel, P.J., Wyant, S.H., and Bell , W.E. Organizational specialists in a school district: four years of innovation. Technical Report, Eugene, OR: Center for Educational Policy and Management, 1975. ERIC Order No. ED 111 107.

Schmuck, R.A., Francisco, R.P., Bell, W., Gross, T., and Bassin, M. Renewing urban schools. (Special issue of Theory into Practice,18(2), 1979.)

Schensul, S.L. Attempts at linkage: the New York Region seminar plan. DTA draft. October 1977.

Sieber, S.D. Incentives and disincentives for knowledge utilization in public education. Paper prepared for Program on Research and Educational Practice, National Institute of Education, 1980.

Sieber, S.D., Louis, K.S., and Metzger, L. The use of educational knowledge: Evaluation of the Pilot State Dissemination Program (2vols.) New York: Bureau of Applied Social Research, Columbia University, 1972.

Smith, L.M. and Dwyer, D.C. Federal policy in action: a case study of an urban education project. St. Louis: Graduate Institute of Education, Washington University, 1979.

Smith, D.M., and Gregory, L. Some issues in field research. DTA draft, August 1978.

Stearns, M.S., and Norwood, C.R. Evaluation of the field test of Project Information Packages. Menlo Park, CA: Stanford Research Institute, 1977.

Stedman, D.J. The technical assistance system: a new organizational form for improving education. In M. Reynolds (Ed.) National technical assistance systems in special education. Minneapolis, MN: Leadership Training Institute for Special Education, University of Minnesota, 1975.

Stern, R.P. DTA's computer based data management system. DTA draft, October 1977.

Treadway, P.G. Title I migrant special dissemination effort organizing and training meeting: background and summary report. Mountain View, CA: RMC Research Corp, 1977.

U.S. Office of Education. Educational programs that work: a resource of exemplary educational programs developed by local school districts and approved by the Joint Dissemination Review Panel in the Education Division of the Department of Health Education and Welfare. San Francisco: Far West Laboratory for Educational Research and Development, 1978.

U.S. Office of Education. Sharing educational success: a handbook for validation of educational practices. Washington, D.C., 1979 (Revised edition).

Wilson, S. The importance of shared cognitive frameworks to the sustained improvement of urban schools. DTA draft, 1977.

Yates, G.R., Jr. The DTA computer system. DTA draft. October 1977.

Zaltman, D., Florio, D., and Sikorski, L. Dynamic educational change. New York: Free Press, 1977.